

KM330/KM335

Service Manual



LG Electronics

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1. INTRODUCTION

1.1 Purpose

This manual provides information necessary to repair, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services.

system users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use .The manufacturer dose not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunications service of facilities accessed through or connected to it.

The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual.

Therefore, note that authorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Devices(ESD),are indicated  by the sign.

Following information is ESD handing:

- . Service personnel should ground themselves by using a wrist strap when exchange system boards.
- . When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- . Use a suitable, grounded soldering iron .
- . Keep sensitive parts in these protective packages until these are used.
- . When returning system boards or parts like EEPROM to the factory, use the protective packages as described.

2. PERFORMANCE

2.1 H/W Features

Item	Specifications	etc
Type	Bar type	
Antenna Type	Internal (tri-Band)	
Main Display	2.0" 320x240	
GPRS	Class 10	
MMS	Yes, 1.1	
Camera	3.0M AF	
Flash Light	Yes	
Battery (KM330)	900mAh Li-ion inner pack	LG chemical -LGIP-430A
Battery (KM335)	1100mAh Li-ion inner pack	Tocad/ LG chemical - LGIP-530A
Audio player	Yes	MP3/AAC/AAC+/WMA
FM Receiver (KM330/KM335)	Yes , US/Europe band support	(87.5~108MHz)
AM Receiver (only KM335)	Yes, world wide AM band	(522 ~ 1710KHz)
MPEG4/H.263	Yes (support 3GP)	
AAC	Yes	
AAC+	Yes	LGE License
WMA	Yes	LGE License
3D Sound	Yes	
FM/AM as alarm	Yes	
Scheduled FM/AM recording	Yes	
MP4 for incoming call/ power on off animation and screen saver	Yes	
Loud Speaker	Yes	
Audio player--real resuming	Yes, for MP3 only	
Video recording	Yes	
Memory Size	256Mb SDRAM + 1Gb NAND	
Internal NAND	90M Bytes	
Memory Card	Micro SD	Up to 8GB
Bluetooth	Yes, version 2.0	W/O EDR.
USB	Yes, USB 2.0 Full Speed	
WAP	Yes, 2.0	
Java	Yes	
Status LED	YES, white LED+5pcs	
MPEG4 caller ID	Yes	
OTA	Yes	
Music Equalizer	Yes	
In flight mode	Yes	
Frequency	Three Band (900/1800/1900)	

2.2 S/W Features

2-2-1 System Specification

Item	Target Specification
Form Factor	Bar Type
Size	KM330: 108.2*47.2*13.8 KM335: 108.2*47.2*14.8
Weight	KM330: 83g / KM335: 88g
Battery	3.7V, 900mAh Li-Ion / 1100mAh Li-ion
Talk Time	4 hrs 52 min @900mAh @GSM900 PCL 10 TBD 5 hrs 30 min @1100mAh @GSM900 PCL 10 TBD
Standby Time	KM330: 428 hrs@900mAh @ Paging period 9 TBD KM335: 450 hrs@1100mAh @ Paging period 9 TBD
Antenna	Embedded type
LCD	262Kcolor, 320x240 TFT
FM/AM Radio	Yes,
Camera	3.0M pixel AF
Back Light	White LED
Keypad Backlight Color	White LED
Vibrator	Yes
Loud Speaker	Yes, Dual (13*18Φ oval type 2 ea), out put : 0.8W over
Microphone	Yes
Earphone Jack	No
SIM Socket	Yes, 1.8/3.0V
Volume Key	Side key (up/down)
Basic Accessory	Travel Adaptor Standard Battery (900mA, Li-Ion) Stereo Headset with button (FM) USB Data Cable

2-2-2 General Features

Function	Target Specification
Basic Display	RSSI (7 Levels <<Off,0~2,4~5,7>>) Battery Indicator (4 Level, 0~3) Icons Indicator Others reference to "Phone Personalization Setting"
Speech Codec	FR/EFR/HR/AMR
Keypad	Number of Keys: 24 Key (include 12 alphanumeric/number keys (0-9,#,*), 4 function keys , 5 way navigation keys, 4 side keys) Soft Function Keys : 2 International Access (+)(long 0)
User Profile (Audio Settings)	User Selectable and Customizable Profiles (7 profiles: General, Meeting, Outdoor, Vibrate only, Headset, Silent, Bluetooth) Auto-detect and activated profiles (1 profile: Headset)

	Key Tone
	Key Tone Volume (7 Level - 0 ~ 6, 0 for Mute)
	Key tone setting (4 sets: Silent, Click, Keyboard Tone , Melody Tone , English/Russian Human voice)
	Ring Tone
	Ring Tone Volume (7 Level - 0 ~ 6, 0 for Mute)
	Built-in Ring Tone Pattern: 20
	Customizable Ring Tone Link: 5
	Intelligent Call Alert
	Digits To Sound Synthesizing
	Alert Type
	6 Types - Ring, Vibration Only, Vibration and Ring, Ring after vibration, Light Only, Beep Once
	Power On Tone
	Built-in Ring Tone Pattern: 5 (include Silent)
	Power Off Tone
	Built-in Ring Tone Pattern: 5 (include Silent)
	Message Tone
	Built-in Ring Tone Pattern: 11 (include Silent)
	Warning Tone
	Built-in Ring Tone Pattern: 1 (Only On/Off operation)
	Error Tone
	Built-in Ring Tone Pattern: 1 (Only On/Off operation)
	Camp On Tone
	Built-in Ring Tone Pattern: 1 (Only On/Off operation)
	Connect Tone
	Built-in Ring Tone Pattern: 1 (Only On/Off operation)
	Status LED
	Built-in Lighting Pattern: 2 (None, Pattern 1)
	Charger-in Status LED
	Built-in Lighting Pattern: 2 (None, Pattern 1)
	Answer Mode
	Any Key Answer
	Auto (Only available for headset mode while headset plugged in)
Personal Information Management	Calendar - Month view only
	To do list - 6 fields (Date, Start time, End time, Note, Alarm, Repeat)
Tools and Utilities	Alarm
	3 sets of Alarm
	4 major fields for each set - On/Off, Time, Repeat type, Audio option
	World Clock
	Cities list: China(52),IND(54),CIS(68) cities
	Daylight saving time support: activated by user selection

	Home city set
	Calculator
	Addition, Subtraction, Multiplication, Division
	Unit Converter
	Weight, Length
	Currency Converter
	Health
	BMI, Menstrual
Phone Personalization Setting	Greeting Text
	Shortcuts
	Flight Mode
	Time and Date Setting
	Wallpaper
	Screen Saver
	Power On Animation
	Power Off Animation
	LCD Backlight
	PLMN/Service Indicator (Display of PLMN Name/Service Provider Name from SIM)
	Date Time Display
	Own Number Display
	Restore Factory Default Setting
Security	Phone Lock
Input Method	Engine
	T9
	Support Language
	Depends on customer and market requirement. Total supported languages will be limited to memory condition.
	Predictive word input
Game	3 embedded Java Games: Mini Game World, Chequered Flag, Backgammon
	Settings: BGM, Sound Effect, Vibration

2-2-3 GSM/GPRS Features

Function	Target Specification
GPRS	GPRS Multi slot Class 10
Data Service	BS 24 - 26 (2400-9600 bit/s), asynchronous, non-transparent, UDI. CSD rate up to 9.6K bit/s
Call History	Last Dialed Number : 40
	Last Received Number : 40
	Last Missed Number : 40
	Scratch Pad Memory(Save an input number in call) : 1

Call Cost	Last Call Time
	Total Dialed Call Time
	Total Received Call Time
	Last Call Cost
	Total Cost
	Max Cost
	Price Per Unit
GPRS Counter	Last Sent (unit in Byte)
	Last Received (unit in Byte)
	All Sent (unit in Byte)
	All Received (unit in Byte)
Call Management	Call Swap
	Call Retrieve
	Automatic Redial
	Speed Dialing
	Last Number Redial
Call Related Supplementary Services	Call Hold
	Call Waiting
	Calling Line Identity Presentation
	Calling Line Identity Restriction
	Connected Identification Restriction
	Call Divert All voice Calls
	Call Divert if unreachable
	Call Divert if no answer
	Call Divert if busy
	Call Divert all data calls
	Cancel all divert
	Call Barring All Outgoing Calls
	Call Barring All Outgoing International Calls
	Call Barring All outgoing International except home
	Call Barring All incoming Calls
	Call Barring All incoming Calls when roaming
	Multi-party Call (up to 7 calls, 5 in conference, 1 on held, 1 waiting)
	Line switching (Line1, Line2)
	Call reminder (Off, Single, Periodic)
	Closed User Group
Phone Book	Quick Search (Notice: Quick search function only works in Phonebook, SMS and MMS. In other application, this phone supports regular search.)
	Alpha Store and Recall
	Access Phone Book in call
	Copy & Move
	Fixed Dial Number
	Service Dial Number
	Speed Dial Number
	SOS Number

	Entry : 1000 names (12 fields – Name, Mobile, Home, Company name, Email address, Office number, Fax number, Birthday, Associate Picture, Associate Video, Associate Sound, Caller group)
	Caller Group-5 caller group- Friends, Family, VIP, Business, Others (6 fields – Name, Ring, Picture, LED pattern, Video, Member list)
	Own Numbers: User can change the own numbers of handset. (Sets of own numbers depends on SIM)
	vCard: (Edit, Send and Receive. 7 fields – Name, Mobile, Home, Company Name, Email Address, Office Number, Fax Number)
	Note: This phone doesn't support phone number search.
Message	SMS
	Standard SMS
	SMS Reply Path
	SMS Delivery Report
	Valid period (1 hour/12 hours/1 day/1 week/Maximum)
	Message Type (Text, Fax, Page, Email) Message Indication Type refer to GSM 03.40
	Basic text-only SMS as described in 3GPP TS 23.040 R5
	Notice: This phone doesn't support video ring tone via SMS
	SMS Character Sets Support
	GSM7
	UCS-2
	EMS
	EMS Standard as described in 3GPP TS 23.040 R5 excluding WVG
	EMS Text Format
	Text Style : Normal, Bold, Italic, Underlined, Strikethrough
	Text Alignment : Left, Right, Center
	Text Size : Normal, Large, Small
	EMS Image Support
	1-bit small image 16x16 pixels black and white
	1-bit large image 32x32 pixels black and white
	1-bit variable image in single SMS packet
	Extended black and white 1-bit image up to 255x255 pixels
	Extended 6-bit image up to 255x255
	Pre-defined animation
	User-defined small animation 8x8 pixel 4-frame black and white
	User-defined large animation 16x16 pixel 4-frame black and white
	Pre-defined sound
	User-defined i-Melody up to 128 bytes
	LZSS compression algorithm
	Re-use extended object
	Object Distribution
	User Prompt Indicator

Hyperlink format element
Extended Object Distribution
Notice: This mobile doesn't support Nokia smart message format (including WBMP), only support *.ems format" → subject to Nokia smart message license
EMS Character Sets Support
GSM7
UCS-2
EMS Miscellaneous
SMS Concatenation (8 Segments for MT/MO)
SMS Compression
MMS
MMS Standard as described in 3GPP TS 23.140 V4.8.0
Extract media from Message
Insert Media into message
OTA provisioning partially support (Network Profile setting
Auto download mode
Manual download mode
Operator can pre-configure the delivery mode
MMS notification with icon or Pop-up message display)
MMS Message Format
MMS SMIL (A subset of SMIL descried in the MMS Conformance Document 1.2)
MMS Character Sets Support
US-ASCII
Unicode
ISO-8859-1
UTF-16
UTF-8
MMS Images Support
WBMP Wireless bitmap
GIF87
GIF89a
JPEG
MMS Sound Formats Support
WAV
AMR
MIDI
MP3
i-Melody
MMS Miscellaneous
Multipart binary MIME
Storage

	Separated Inbox folder for SMS and MMS
	Separated Outbox folder for SMS and MMS
	Total 300 SMS in the storage of phone plus SIM including Inbox and Outbox (Phone could supports 260sets SMS including Inbox and Outbox. The maximum SMS stored in SIM are 40sets. It means the actual SMS quantities in Inbox and Outbox are among (260 to300))
	Total 100 MMS in the phone storage including Inbox, draft and Outbox Notice: Total MMS count need depends on user memory space.
	Common Operation
	Write Message
	Read Message
	Edit Message (For MMS, Edit only conformance messages, unknown media not supported, unknown SMIL not supported)
	Reply Message
	Send Message (Support Multiple sending by a group: Max 300ea)
	SMS Sorting (Sender, date)
	Delete Message
	Forward Message (Support Multiple sending by a group: Max 300ea)
	Use Sender's Number
	Message Templates
	Extract media from Message (MMS/EMS)
	Store Media (MMS/EMS)
	Delete Media (MMS/EMS)
Cell Broadcast	Read Cell Broadcast
	Cell Broadcast Mode: Receive On/Off
	Cell Broadcast Message Language
	Channel Setting
Network	Automatic Network Selection
	Manual Network Selection
	Network Service Status
	Preferred Network (User definition)
	GPRS connection mode selection: Always, When Needed
SIM	Common Operation
	SIM Application Toolkit (Release 98 Class 2 certified)
	Prepaid SIM operation
	Security
	PIN
	Personalization (Service provider lock, Network lock)
DTMF	DTMF Signaling
	DTMF Enable & Disable

2-2-4 Multimedia Features

Function	Target Specification
Camera	Image size: 320X240, 640X480, 1280X1024, 1600x1200, 2048x1536
	Zoom: 1x ~ 4x
	Image Quality: High, Normal, Low
	White Balance: Auto, Daylight, Tungsten, Fluorescent, Cloud, Incandescence
	Shot: Three Shot Sounds
	EV: -4 ~+4
	Screen Mode: Auto, Night
	Banding: 60Hz/50Hz
	Effect settings: (Total 14 types) Normal, Grayscale, Sepia, Sepia Green, Sepia Blue, Color Invert, Gray Invert, Blackboard, Whiteboard, Copper Carving, Blue Carving, Embossment, Contrast, Sketch
	No. of the Stick Frames: 3 Frame 1, Frame 2, None Stick Frame Only can be used while image size is 240WX320H
	Storage Selection: Phone, Memory card (Only available when external memory card supported)
	Delay timer: Off/ 5/ 10/ 15 Sec
Image Viewer	Thumbnail supported
	Browse Style: List, Matrix
	View
	Forward: To Wallpaper, Phonebook, Screen Saver, Power On Display, Power Off Display, MMS, Bluetooth
	Rename
	Delete
	Delete All
	Sort: By Name, Type, Time, Size, None
	Storage Selection: Get list from Phone, Memory card (Only available when external memory card supported)

	Image Format Support
	JPEG Baseline
	GIF87a
	GIF89a
	WBMP
	BMP
	Play
	Pause
Music Player	Resume
	Stop
	Next
	Previous
	Storage Selection: Get list from Phone, Memory card (Only available when external memory card supported)
	Auto-Generate Playlist
	Skin: 2 skins
	Repeat Mode: Off, One Song, All Songs
	Shuffle Play
	Background Play
	Equalizer Setting: 8 sets Normal, Bass, Dance, Classical, Treble, Party, Pop, Rock
	Volume Control: 31 level (0~30, 0 for Mute)
	Playlist Edit: Add, Remove, Remove All
	Sound Format Support
	MP3
	AMR
	MIDI
	WAV
	AAC
	Play
	Pause
Video Player	Stop
	Speed Control: X1, X2, X4, X8, X1/2
	Forward: To Phonebook, Screen Saver, Power On Animation, Power Off Animation, MMS, Bluetooth

Video Recorder	Rename
	Delete
	Delete All
	Sort: By Name, Type, Time, Size, None
	Storage Selection: Get list from Phone, Memory card
	Volume Control: 7 level (0 ~ 6, 0 for Mute)
	White Balance: Auto, Daylight, Tungsten, Fluorescent, Cloud, Incandescence
	EV: -4 ~+4
	Night Mode: On/Off
	Banding: 60Hz/50Hz
	Video Quality: Fine, High, Normal, Low
	File Size Limit: No Limit, 95KB, 195KB, 295KB,
	Record Time Limit: No Limit, 15 sec, 30 sec, 60 sec
	Record Audio: On/Off
	Encode Format: MPEG4, H.263
	Effect settings: (Total 14 types) Normal, Grayscale, Sepia, Sepia Green, Sepia Blue, Color Invert, Gray Invert, Blackboard, Whiteboard, Copper Carving, Blue Carving, Embossment, Contrast, Sketch
	Storage Selection: Phone, Memory card (Only available when external memory card supported)
	Record
	Pause
	Resume Recording
	Stop

	Storage Selection: Phone, Memory card (Only available when external memory card supported)
	Encode Format: WAV, AMR
Sound Recorder	Record
	Pause
	Resume Recording
	Stop
	Edit
	Play
Melody Compose	Save
	Instrument Selection: 10 types Piano, Guitar, Violin, Saxophone, Steel Drums, Flute, Harmonica, Trumpet, Music Box, Xylophone
	Play Speed: Fast, Normal, Slow
	[Notice] Melody composer only support one instrument in one melody file, so the last chosen instrument will be used to play this melody file
	FM Frequencies: 87.5~108MHz / AM Frequencies: 522 ~ 1710KHz Skin: 2 skins
	User definable Preset Channel List
FM/AM Radio	Channel Auto Search
	Background Play
	Record
	Record Format: AMR, WAV
	Record Storage: Phone, Memory Card (Only available when external memory card supported)
	Preset Channel List generated by auto search
	MIDP 2.0
	CLDC 1.0
JAVA	Memory Limit 2MB Support JSR 139,118,120,135,185

2-2-5 Connectivity Features

Function	Target Specification
WAP	WAP 2.0 Spec.
	WAP Push OTA/Message
	WAP Provisioning Service
	CSD/GPRS data connection
	Bookmark
	Wireless Telephony Application (WTA) support: Only Public WTA support, supported functions listing below - <ul style="list-style-type: none"> * Make a telephone call * Send a string of DTMF tones over an established voice connection * Add an entry to the telephone book of the device
	Support OTA push and push message
	OTA Provisioning & OTA download
	Supports WML, WCSS, XHTML mp
Google	Google Searching
Bluetooth	Version 2.0 w/o EDR
	Profile: GAP; SDAP; DUN; SPP; OPP; HSP; HFP; FTP; A2DP; AVRCP ;BPP
USB	Mass Storage Device
	Virtual COM

3. TECHNICAL BRIEF

3.1 Digital Main Processor

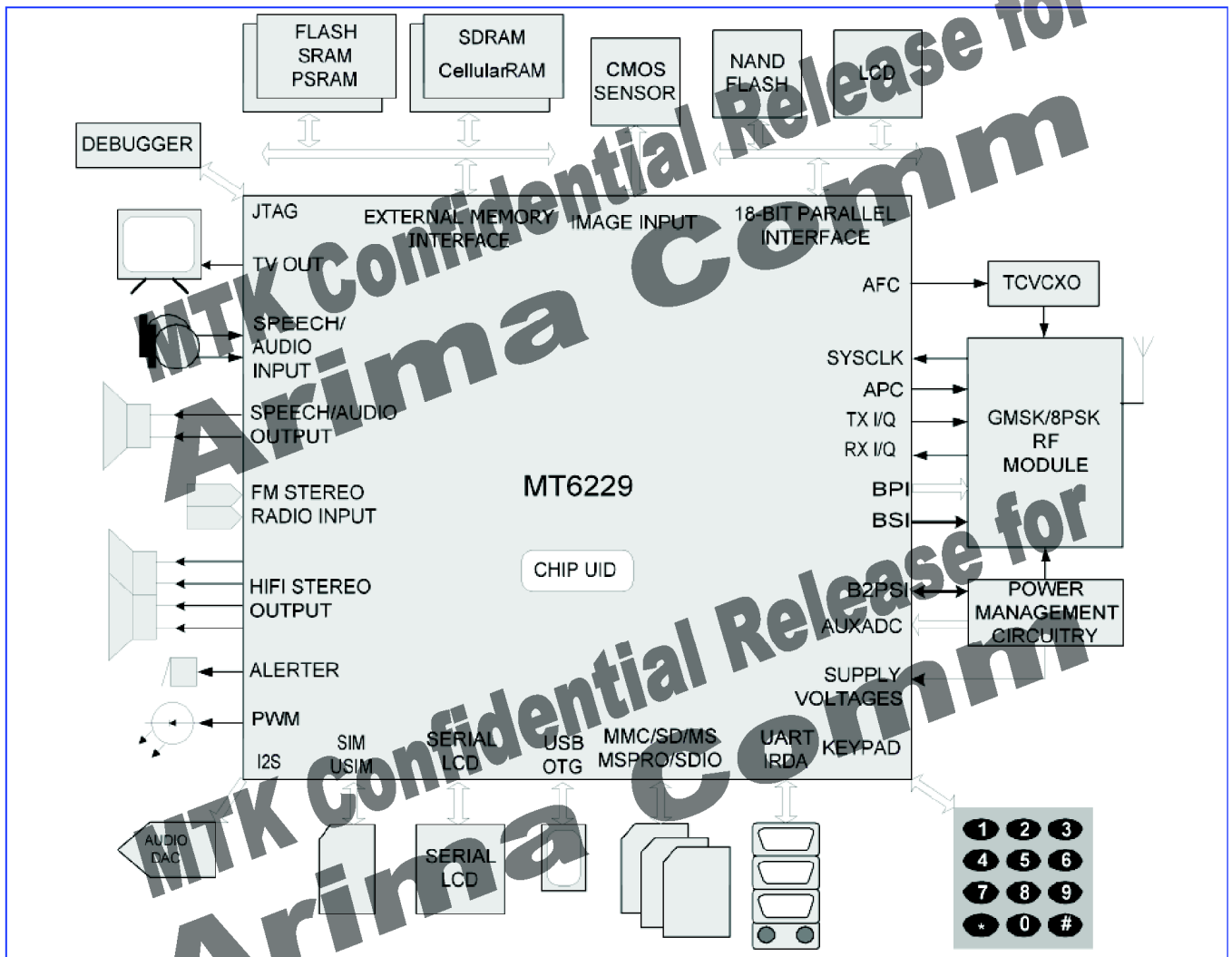


Figure.3-1-1 MT6229 FUNCTIONAL BLOCK DIAGRAM

3.1.1 System Overview

MT6229 is a feature-rich and extremely powerful single-chip solution for high-end mobile phones with GSM/GPRS and EDGE capability. Based on 32 bit ARM7EJ-STM RISC processor, MT6229's superb processing power along with high bandwidth architecture and dedicated hardware support provides an unprecedented platform for high performance EGPRS Class 12 MODEM and leading-edge multimedia applications. To sum up, MT6229 presents a revolutionary platform for multimedia-centric mobile devices along with an EDGE capable modem.

Typical application diagram is shown in **Figure3- 1**.

Platform

MT6229 is capable of running the ARM7EJ-STM RISC processor at up to 104Mhz, thus providing fast data processing capabilities. In addition to the high clock frequency, separate CODE and DATA caches are also added to further improve the overall system efficiency. For large amount of data transfer, high performance DMA (Direct MemoryAccess) with hardware flow control is implemented, which greatly enhances the data movement speed while reducing MCU processing load. Targeted as a media-rich platform for mobile applications, MT6229 also provides hardware security digital rights management for copyright protection. For further safeguarding, and to protect manufacturer's development investment, hardware flash content protection is also provided to prevent unauthorized porting of software load.

Memory

To provide the greatest capacity for expansion and maximum bandwidth for data intensive applications such as multimedia features, MT6229 supports up to 4 external state-of-the-art devices through its 8/16-bit host interface. High performance devices such as Mobile RAM, and Cellular RAM are supported for maximum bandwidth. Traditional devices such as burst/page mode Flash, page mode SRAM, and Pseudo SRAM are also supported. For greatest compatibility, the memory interface can also be used to connect to legacy devices such as Color/Parallel LCD, and multi-media companion chip are all supported through this interface. To minimize power consumption and ensure low noise, this interface is designed for flexible I/O voltage and allows lowering of supply voltage down to 1.8V. The driving strength is configurable for signal integrity adjustment. The data bus also employs retention technology to prevent the bus from floating during turn over.

Multi-media

TheMT6229 multi-media subsystem provides connection to CMOS image sensor and supports resolution up to 3M pixels. With its advanced image signal and data processing technology, MT6229 allows efficient processing of image and video data. It also has built-in JPEG CODEC and MPEG-4/H.263 CODEC, thus enabling real-time recording and playback of high-quality images and video. Hardware MPEG4/H.263 accelerator supports playback in VGAmode at 15fps, and encoding in CIF at 15fps. Videophone functionality is also provided. Moreover, high quality de-blocking filter is provided to remove blocking artifacts in video playback. GIF decoder and PNG decoder are implemented as well for fast image decoding. MT6229 also supports TV-OUT capability, thus allowing the mobile handset to connect to TV screen via NTSC/PAL connections. In addition to advanced image and video features, MT6229 also utilizes high resolution DAC, digital audio, and audio synthesis technology to provide superior audio features for all future multi-media needs.

Connectivity, and Storage

In order to take advantage of its incredible multimedia strengths, MT6229 incorporates myriads of advanced connectivity and storage options for data storage and communication. MT6229 supports UART, Fast IrDA, USB 1.1 Full Speed OTG, SDIO, Bluetooth and WIFI Interface, and MMC/SD/MS/MS Pro storage systems. All these interfaces provide MT6229 users with the highest degree of flexibility in implementing solutions suitable for the targeted application. To achieve a complete user interface, MT6229 also brings together all the necessary peripheral blocks for a multi-media 2.75G phone. The peripheral blocks includes the Keypad Scanner with the capability to detect multiple key presses, SIM Controller, Alerter, Real Time Clock, PWM, Serial LCD Controller, and General Purpose Programmable I/Os. Furthermore, to provide more configuration and bandwidth for multi-media products, an additional 18-bit parallel interface is incorporated. This interface enables connection to LCD panels as well as connection to NAND flash devices for additional multi-media data storage.

Audio

Using a highly integrated mixed-signal Audio Front-End, the MT6229 architecture allows for easy audio interfacing with direct connection to the audio transducers. The audio interface integrates D/A and A/D Converters for Voice band, as well as high resolution Stereo D/A Converters for Audio band. In addition, MT6229 also provides Stereo Input and Analog Mux. MT6229 supports AMR codec to adaptively optimize speech and audio quality. Moreover, HE-AAC codec is implemented to deliver CD-quality audio at low bit rates. On the whole, MT6229's audio features provide a rich solution for multi-media applications.

Radio

MT6229 integrates a mixed-signal Baseband front-end in order to provide a well-organized radio interface with flexibility for efficient customization. It contains gain and offset calibration mechanisms, and filters with programmable coefficients for comprehensive compatibility control on RF modules. This approach also allows the usage of a high resolution D/A Converter for controlling VCXO or crystal, thus reducing the need for expensive TCVCXO. MT6229 achieves great MODEM performance by utilizing 14-bit high resolution A/D Converter in the RF downlink path. Furthermore, to reduce the need for extra external current-driving component, the driving strength of some BPI outputs is designed to be configurable.

Debug Function

The JTAG interface enables in-circuit debugging of software program with the ARM7EJ-S core. With this standardized debugging interface, MT6229 provides developers with a wide set of options in choosing ARM development kits from different third party vendors. Power Management MT6229 offers various low-power features to help reduce system power consumption. These features include Pause Mode of 32KHz clocking at Standby State, Power Down Mode for individual peripherals, and Processor Sleep Mode. In addition, MT6229 is also fabricated in advanced low leakage CMOS process, hence providing an overall ultra low leakage solution.

Package

The MT6229 device is offered in a 13mm×13mm, 314-ball, 0.65 mm pitch, TFBGA package.

3.1.2 Platform Features

General

Integrated voice-band, audio-band and base-band analog front ends
TFBGA 13mm×13mm, 313-ball, 0.65 mm pitch package

MCU Subsystem

ARM7EJ-S 32-bit RISC processor
High performance multi-layer AMBA bus
Java hardware acceleration for fast Java-based games and applets
Operating frequency: 26/52/104 MHz
Dedicated DMA bus
14 DMA channels
1M bits on-chip SRAM
1M bits MCU dedicated Tightly Coupled memory
256K bits CODE cache
64K bits DATA cache
On-chip boot ROM for Factory Flash Programming
Watchdog timer for system crash recovery
3 sets of General Purpose Timer
Circuit Switch Data coprocessor
Division coprocessor
PPP Framer coprocessor

External Memory Interface

Supports up to 4 external devices
Supports 8-bit or 16-bit memory components with maximum size of up to 64M Bytes each
Supports Mobile RAM, and Cellular RAM
Supports Flash and SRAM/PSRAM with Page Mode or Burst Mode
Industry standard Parallel LCD Interface
Supports multi-media companion chips with 8/16 bits data width
Flexible I/O voltage of 1.8V ~ 2.8V for memory interface
Configurable driving strength for memory interface

User Interfaces

6-row × 7-column keypad controller with hardware scanner
Supports multiple key presses for gaming
SIM/USIM Controller with hardware T=0/T=1 protocol control
Real Time Clock (RTC) operating with a separate power supply
General Purpose I/Os (GPIOs)
2 Sets of PulseWidth Modulation (PWM) Output
Alert Output with Enhanced PWM or PDM
8 external interrupt lines

Security

Cipher: supports AES, DES/3DES
Hash: supports MD5, SHA-1
Supports security key and 27 bit chip unique ID

Connectivity

3 UARTs with hardware flow control and speed up to 921600 bps IrDA modulator/demodulator with hardware framer. Supports SIR/MIR/FIR operating speeds. Full-speed USB 1.1 OTG capability. Supports device mode, limited host mode, and dual-role OTG mode, Multi Media Card/Secure Digital Memory Card/Memory Stick/Memory Stick Pro host controller with flexible I/O voltage power Supports SDIO interface for SDIO peripherals as well as WIFI connectivity DAI/PCM and I2S interface for Audio application

Power Management

Power Down Mode for analog and digital circuits
Processor Sleep Mode
Pause Mode of 32KHz clocking at Standby State
7-channel Auxiliary 10-bit A/D Converter for charger and battery monitoring and photo sensing

Test and Debug

Built-in digital and analog loop back modes for both Audio and Baseband Front-End
DAI port complying with GSM Rec.11.10
JTAG port for debugging embedded MCU

3.1.3 MODEM Features

Radio Interface and Baseband Front End

GMSK/8PSK modulator with analog I and Q channel outputs
10-bit D/A Converter for uplink baseband I and Q signals
14-bit high resolution A/D Converter for downlink baseband I and Q signals
Calibration mechanism of offset and gain mismatch for baseband A/D Converter and D/A Converter
10-bit D/A Converter for Automatic Power Control
13-bit high resolution D/A Converter for Automatic Frequency Control
Programmable Radio RX filter with adaptive bandwidth control
Dedicated Rx filter for FB acquisition
2 Channels Baseband Serial Interface (BSI) with 3-wire control
Bi-directional BSI interface. RF chip register read access with 3-wire or 4-wire interface.
10-Pin Baseband Parallel Interface (BPI) with programmable driving strength
Multi-band support

Voice and Modem CODEC

- Dial tone generation
- Voice Memo
- Noise Reduction
- Echo Suppression
- Advanced Sidetone Oscillation Reduction
- Digital sidetone generator with programmable gain
- Two programmable acoustic compensation filters
- GSM/GPRS quad vocoders for adaptive multirate (AMR), enhanced full rate (EFR), full rate (FR) and half rate (HR)
- GSM channel coding, equalization and A5/1, A5/2 and A5/3 ciphering
- GPRS/EGPRS GEA1, GEA2 and GEA3 ciphering
- Programmable GSM/GPRS/EGPRS Modem
- Packet Switched Data with CS1-CS4, MCS1-MCS9 coding schemes with full set IR (Incremental Redundancy) support
- GSM Circuit Switch Data
- GPRS/EGPRS Class 12

Voice Interface and Voice Front End

- Two microphone inputs sharing one low noise amplifier with programmable gain and automatic gain control (AGC) mechanism
- Voice power amplifier with programmable gain
- 2nd order Sigma-Delta A/D Converter for voice uplink path
- D/A Converter for voice downlink path
- Supports half-duplex hands-free operation
- Compliant with GSM 03.50

3.1.4 Multi-Media Features

LCD/NAND Flash Interface

- Dedicated Parallel Interface supports 3 external devices with 8/16 bit NAND flash interface, 8/9/16/18 bit Parallel Interface, and Serial interface for LCM
- Built-in NAND Flash Controller with 1-bit ECC for mass storages
- Two chip selects available for high-density NAND flash device

LCD Controller

- Supports simultaneous connection to up to 3 parallel LCD and 2 serial LCD modules
- Supports LCM format: RGB332, RGB444, RGB565, RGB666, RGB888
- Supports LCD module with maximum resolution up to 800x600 at 24bpp
- Per pixel alpha channel
- True color engine
- Supports hardware display rotation
- Capable of combining display memories with up to 6 blending layers
- Three Gamma correction tables

Image Signal Processor

- 8/10 bit Bayer format image input
- YUV422/YCbCr422/RGB565 image input
- Capable of processing image of size up to 3M pixels
- Color Correction Matrix
- Gamma Correction
- Automatic Exposure Control
- Automatic White Balance Control
- Automatic Focus Control
- Edge Enhancement
- Color Suppression
- Cross-talk compensation
- Shading compensation
- Defect Pixel compensation

Graphic Compression

- GIF Decoder
- PNG Decoder

JPEG Decoder

- ISO/IEC 10918-1 JPEG Baseline and Progressive modes
- Supports all possible YUV formats, including grayscale format
- Supports all DC/AC Huffman table parsing
- Supports all quantization table parsing
- Supports restart interval
- Supports SOS, DHT, DQT and DRI marker parsing
- IEEE Std 1180-1990 IDCT Standard Compliant
- Supports progressive image processing to minimize storage space requirement
- Supports reload-able DMA for VLD stream

JPEG Encoder

- ISO/IEC 10918-1 JPEG baseline mode
- ISO/IEC 10918-2 Compliance
- Supports YUV422 and YUV420 and grayscale formats
- Supports JFIF
- Standard DC and AC Huffman tables
- Provides 14 levels of encode quality
- Supports continuous shooting

Image Data Processing

- Support Digital Zoom
- Support RGB888/565, YUV444 image processing
- High throughput hardware scaler. Capable of tailoring image to arbitrary size
- Horizontal scaling in averaging method
- Vertical scaling in bilinear method
- Simultaneous scaling for MPEG-4 encode and LCD display
- YUV and RGB color space conversion
- Pixel format transform
- Boundary padding

Pixel processing: hue/saturation/intensity/color adjustment, Gamma correction and grayscale/invert/sepia-tone effects
Programmable Spatial Filtering: Linear filter, Non-linear filter and Multi-pass artistic effects
Hardware accelerated image editing
Photo frame capability
RGB thumbnail data output

MPEG-4/H.263 CODEC

Hardware Video CODEC
ISO/IEC 14496-2 simple profile: decode @ level 0/1/2/3 encode @ level 0
ITU-T H.263 profile 0 @ level 10
Max decode speed is VGA@ 15fps
Max encode speed is CIF @ 15fps
Support VGAmode encoding
Horizontal and Vertical De-blocking filter in video playback
Encoder resync marker and HEC
Supported visual tools for decoder: I-VOP, P-VOP, AC/DC prediction, 4-MV, Unrestricted MV, Error Resilience, Short Header
Error Resilience for decoder: Slice Resynchronization, Data Partitioning, Reversible VLC
Supported visual tools for encoder: I-VOP, P-VOP, Half-pel, DC prediction, Unrestricted MV, Reversible VLC, Short Header
Supports encoding motion vector of range up to -64/+63.5 pixels
HE-AAC decode support
AAC/AMR/HE-AAC audio decode support
AMR audio encode support

TV-OUT

Supports NTSC/PAL formats (interlaced mode)
10 bit video DAC with 2x oversampling
Support one composite video output

2D Accelerator

Supports 32-bpp ARGB8888 and 24bpp RGB888 and 16-bpp RGB565 and 8-bpp index color modes
Supports SVG Tiny acceleration
Rectangle gradient fill
BitBlt: multi-BitBlt with 7 rotation, 16 binary ROP
Alpha blending with 7 rotation
Line drawing: normal line, dotted line, anti-aliasing
Circle drawing
Bezier curve drawing
Triangle flat fill
Font caching: normal font, Italic font
Command queue with max depth of 2047

Audio CODEC

- Support HE-AAC decode
- Wavetable synthesis with up to 64 tones
- Advanced wavetable synthesizer capable of generating simulated stereo
- Wavetable including GM full set of 128 instruments and 47 sets of percussions
- PCM Playback and Record
- Digital Audio Playback

Audio Interface and Audio Front End

- Supports I2S interface
- High resolution D/A Converters for Stereo Audio playback
- Stereo analog input for stereo audio source
- Analog multiplexer for StereoAudio
- FM Radio Recording
- Stereo to Mono Conversion

3.1.5 General Description

Figure 3-2 details the block diagram of MT6229. Based on a dual-processor architecture, MT6229 integrates both an ARM7EJ-S core and 2 digital signal processor cores. ARM7EJ-S is the main processor that is responsible for running high-level 2G to 2.75G protocol software as well as multi-media applications. Digital signal processors handle the MODEM algorithms as well as advanced audio functions. Except for some mixed-signal circuitries, the other building blocks in MT6229 are connected to either the microcontroller or one of the digital signal processor. Specifically, MT6229 consists of the following subsystems:

- Microcontroller Unit (MCU) Subsystem - includes an ARM7EJ-S RISC processor and its accompanying memory management and interrupt handling logics.

- Digital Signal Processor (DSP) Subsystem - includes 2 DSP cores and their accompanying memory, memory controller, and interrupt controller.

- MCU/DSP Interface - where the MCU and the DSPs exchange hardware and software information.

- Microcontroller Peripherals - includes all user interface modules and RF control interface modules.

- Microcontroller Coprocessors - runs computing-intensive processes in place of Microcontroller.

- DSP Peripherals - hardware accelerators for GSM/GPRS/EDGE channel codec.

- Multi-media Subsystem - integrates several advanced accelerators to support multi-media applications.

- Voice Front End - the data path for converting analog speech from and to digital speech.

- Audio Front End - the data path for converting stereo audio from stereo audio source

- Video Front End - the data path for converting video signal to NTSC/PAL format.

- Baseband Front End - the data path for converting digital signal from and to analog signal of RF modules.

- Timing Generator - generates the control signals related to the TDMA frame timing.

- Power, Reset and Clock subsystem - manages the power, reset, and clock distribution inside MT6229.

Details of the individual subsystems and blocks are described in following Chapters.

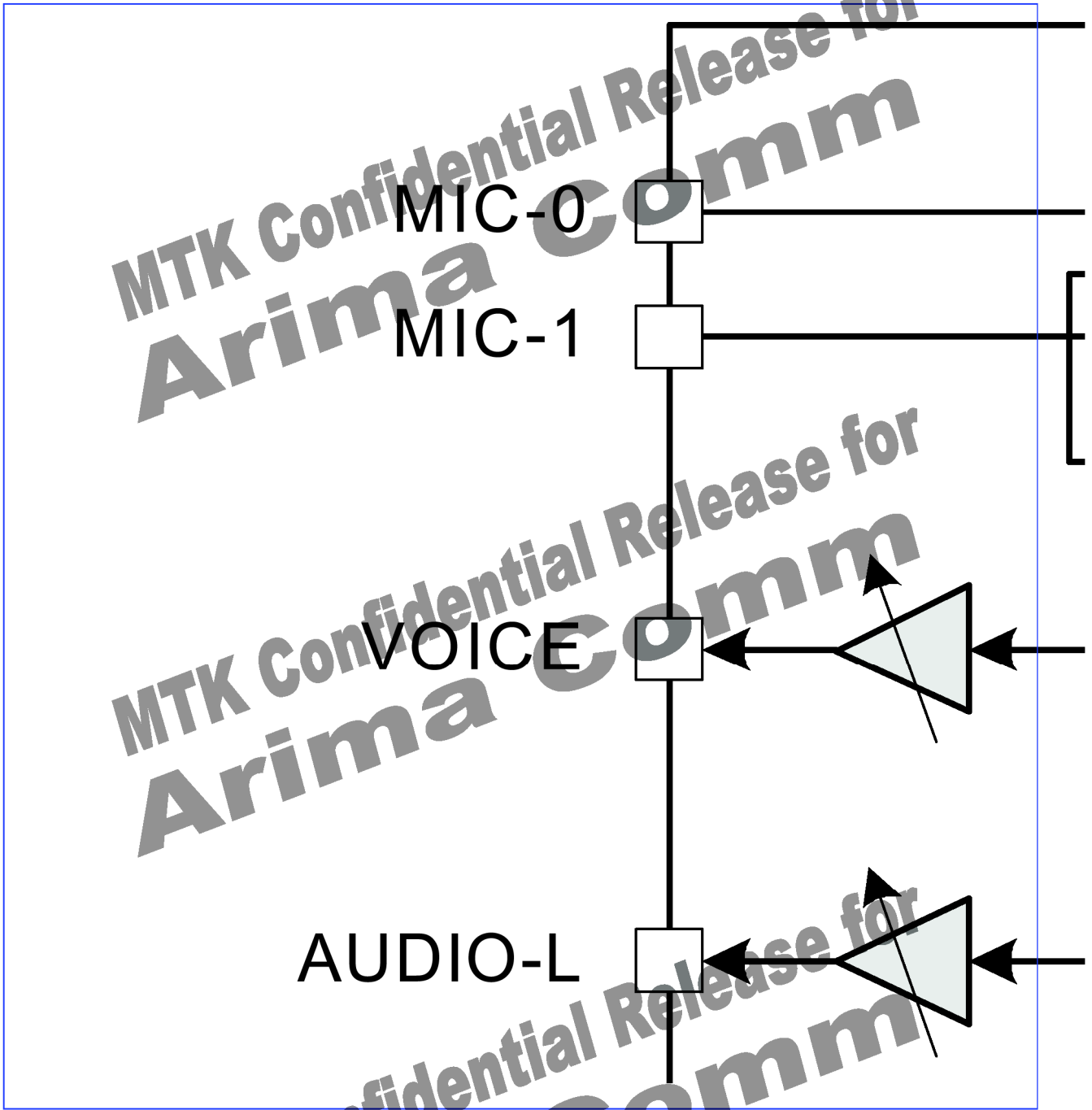


Figure.3-1-2 MT6229 BLOCK DIAGRAM

3.2 Power Amplifier Module(SKY77318)

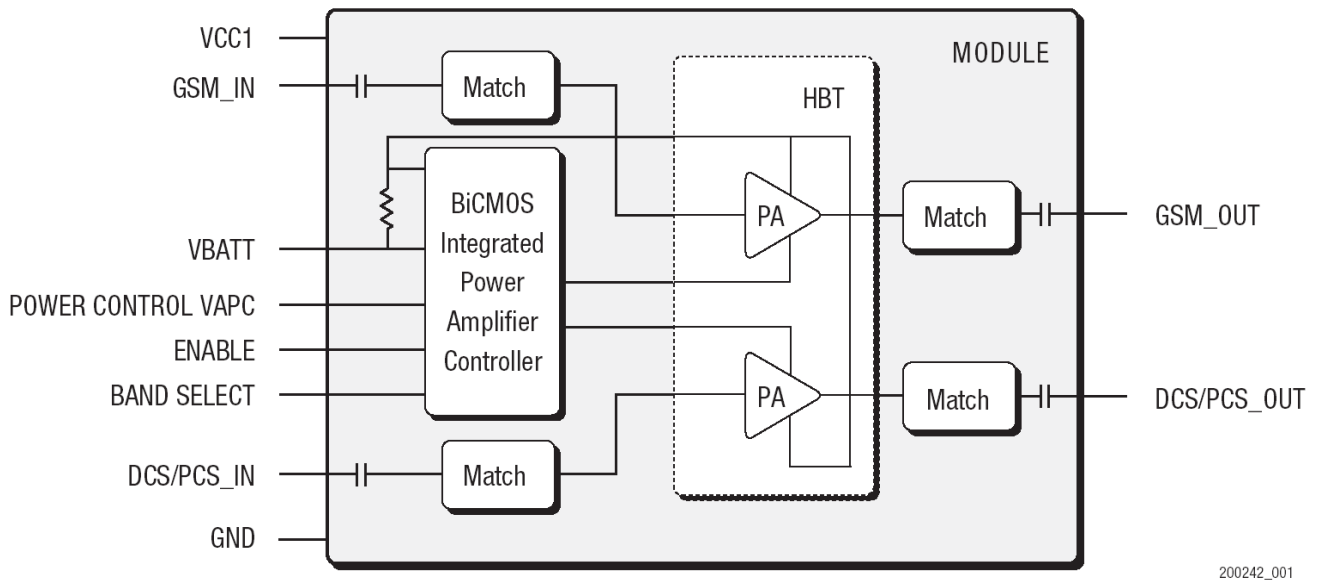


Figure.3-2-1 SKY77318 FUNCTIONAL BLOCK DIAGRAM

The SKY77318 Power Amplifier Module (PAM) is designed in a low profile (1.2 mm), compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, and PCS1900 operation. The PAM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of separate GSM PA and DCS1800/PCS1900 PA blocks, impedance-matching circuitry for 50 Ω input and output impedances and a Power Amplifier Control (PAC) block with an internal current-sense resistor. The custom BiCMOS integrated circuit provides the internal PAC function and interface circuitry. Fabricated onto a single Gallium Arsenide (GaAs) die, one Heterojunction Bipolar Transistor (HBT) PA block supports the GSM bands and the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The GaAs die, the Silicon (Si) die, and the passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

RF input and output ports of the SKY77318 are internally matched to a 50 Ω load to reduce the number of external components for a quad-band design. Extremely low leakage current (2.5 μ A, typical) of the dual PA module maximizes handset standby time. The SKY77318 also contains bandselect switching circuitry to select GSM (logic 0) or DCS/PCS (logic 1) as determined from the Band Select (BS) signal. In [Figure 1](#) below, the BS pin selects the PA output (DCS/PCS_OUT or GSM_OUT) and the Analog Power Control (VAPC) controls the level of output power.

The VBATT pin connects to an internal current-sense resistor and interfaces to an integrated power amplifier control (iPAC.) function, which is insensitive to variations in temperature, power supply, process, and input power. The ENABLE input allows initial turn-on of PAM circuitry to minimize battery drain.

3.3 Transceiver Module(MT6139)

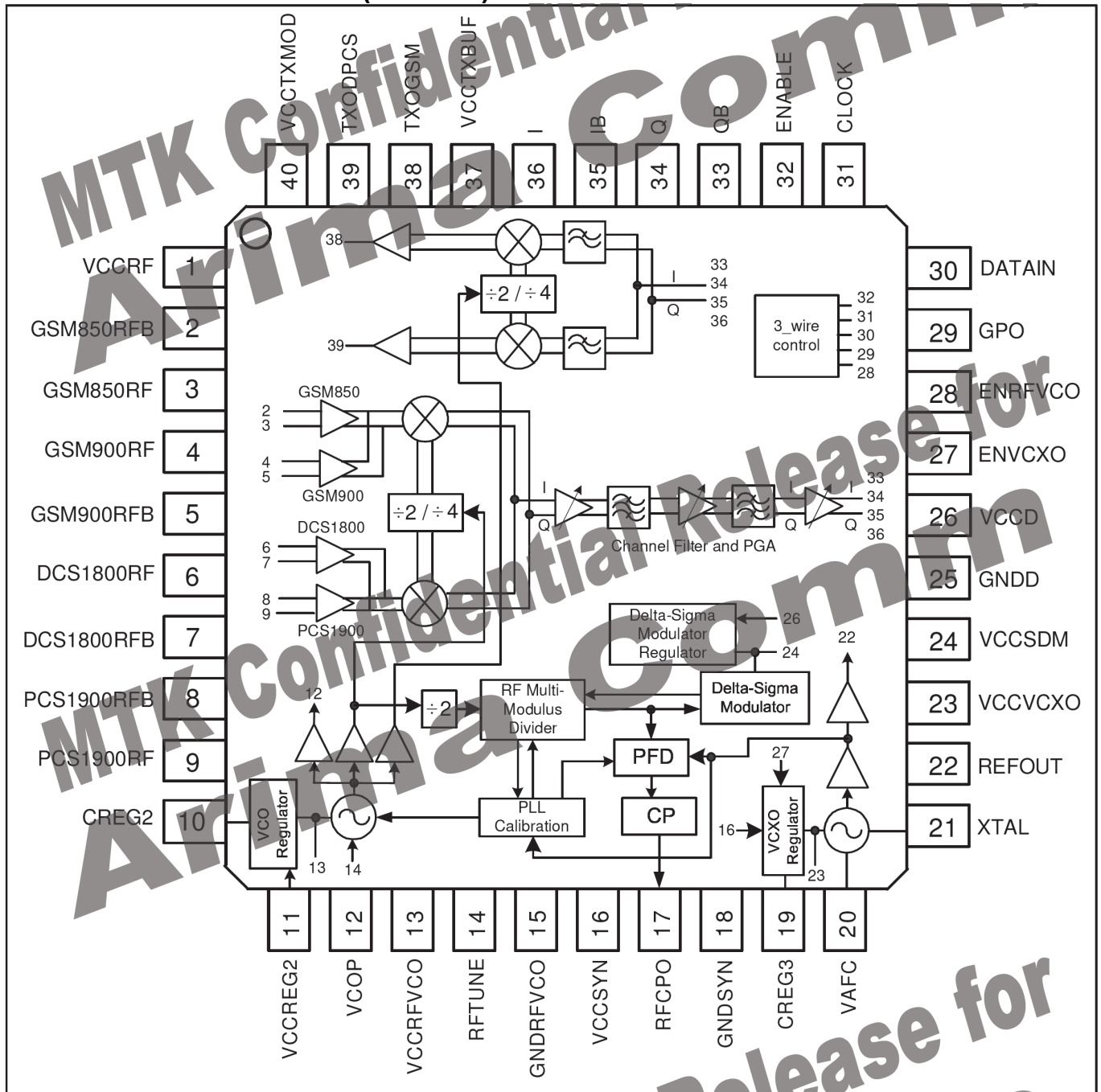


Figure.3-3-1 MT6139 FUNCTIONAL BLOCK DIAGRAM

3.3.1 General Descriptions

MT6139 is a highly integrated RF transceiver IC for Global Systems for Mobile communication (GSM850, GSM900), Digital Cellular communication Systems (DCS1800), and Personal Communication Services (PCS1900) quad band cellular systems. The MT6139 includes four LNA's, two RF quadrature mixers, a channel filter, a programmable gain amplifier for the receiver, a high precision IQ modulator for the transmitter, a VCXO oscillator, on-chip regulators, and a fully programmable sigma-delta fractional-N synthesizer with an on-chip LC VCO. The MT6139 includes control circuits to implement different operating modes. The device is housed in a 40-pin QFN SMD package with a downset paddle for additional grounding.

A functional block diagram of the MT6139 and its pin assignment is shown in Figure 3-3-1

3.3.2 Features

Receiver

- Direct conversion architecture
- Quad differential input LNAs
- Quadrature RF mixers
- Fully integrated channel filter
- 92 dB gain with 60 dB gain control range

Transmitter

- High precision IQ modulator
- Direct conversion architecture

Frequency Synthesizer

- Single integrated, fully programmable fractional-N synthesizer
- Fully integrated wide range RFVCO
- Fast settling time suitable for multi-slot GPRS application

Voltage Control Crystal Oscillator (VCXO)

- 26 MHz crystal oscillator
- Programmable capacitor array for coarse tuning
- Internal varactor for fine tuning

Regulators

- Built-in low-noise, low-dropout (LDO) regulators for low-voltage VCO core
- Built-in low-noise, low-dropout (LDO) regulators for VCXO core
- Built-in LDO regulator for Sigma-Delta modulator

Low power consumption

QFN (Quad Flat Non-lead) Package 40pin SMD

3-wire serial interface

MT6139 is fabricated using a 0.35 mm BiCMOS process

3.3.3 Applications

- GSM900 / DCS1800 dual-band handsets
- GSM900 / PCS1900 dual-band handsets
- GSM850 / PCS1900 dual -band handsets
- GSM900 / DCS1800 / PCS1900 triple-band handsets
- GSM850 / GSM900 / DCS1800 / PCS1900 quad-band handsets

3.4 Bluetooth Module(MTK_MT6601)

The internal connection of the major physical blocks and their associated external interfaces are shown in **Figure 3-4-1**.

The transceiver section of MT6601 incorporates the complete receive and transmit paths, including PLL, VCO, LNA, PA, modulator, demodulator.

The baseband signal processor incorporates hardware engines performing frequency hopping, error correcting, whitening, encrypting, data packet assembling and de-assembly to offload the embedded ARM7.

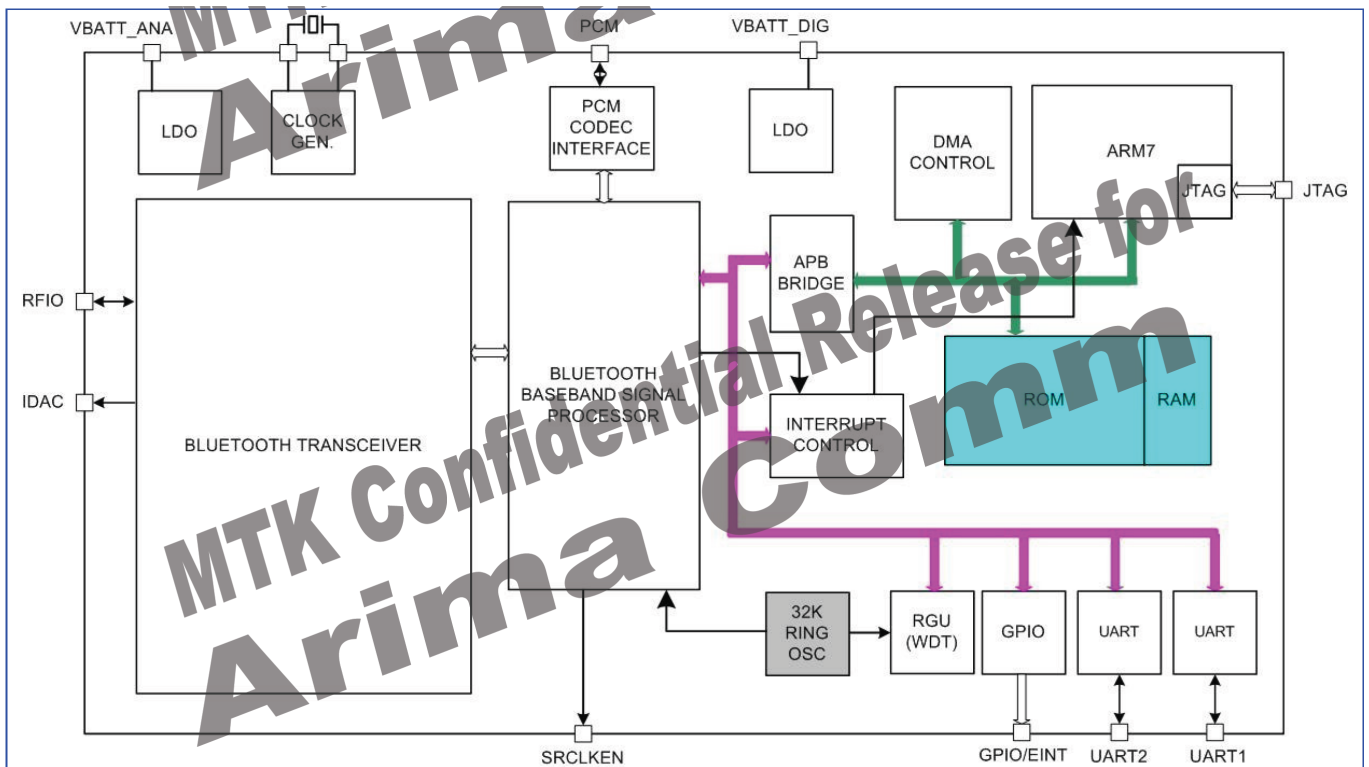


Figure.3-4-1 MT6601 FUNCTIONAL BLOCK DIAGRAM

3.4.1 General description

Bluetooth is a low-cost wireless technology used to provide “ad hoc” networking between versatile portable devices such as cell phones, PDAs, digital cameras, headsets, and more.

MT6601 is a highly integrated Bluetooth platform IC. It includes powerful baseband processing capabilities with rich features and a high performance transceiver, all in a compact single package.

3.4.2 Features

Radio features

- Fully compliant with Bluetooth specification 1.2.

- Low out-of-band spurious emissions supports simultaneous operation with GPS, GSM/GPRS worldwide radio systems.

- Direct conversion architecture with no external channel filter or VCO resonator components.

- Fully integrated RF front-end matching circuits eliminates external balance and T/R switch.

Transmitter features

- Meets class 2 and class 3 transmitting requirement.

- Support Class 1 operation with external PA.

Receiver features

- 85dBm sensitivity with excellent interference rejection performance.

- Hardware AGC dynamically adjusts receiver performance in changing environments.

Baseband features

- eSCO support.

- 3 simultaneous SCO channels.

- Scatternet support.

- Sniff mode, hold mode, and part mode support.

- AFH and PTA collaborative support for WLAN/BT coexistence.

- Lower power mode and deep sleep mode enables ultra low power consumption

Platform features

- On-chip voltage regulation simplifies voltage input requirements.

- Low power consumption in active and standby mode.

- Wide ranges of crystal and external reference clock support.

- PCM interface and built-in transcoders for A-law, μ -law and linear voice.

- Built-in hardware modem engine for access code correlation, header error correction, forward error correction, CRC, whitening, and encryption.

- High speed UART support.

- Built-in RAM and ROM with patch system.

Software features

- Supports standard HCI interface.

3.4.3 Applications

MT6601 is designed to provide direct interface with existing handset chip as shown in **Figure 3-4-2**.

The PCM interface provides master or slave mode operation with programmable data frequency to connect to the voice channel with the GSM baseband. The UART interface supports hardware flow control as well as high-speed baud rate. The PTA interface accommodates different arbitration scheme enabling efficient channel utilization in co-existence environment.

The external reference clock interface supports wide ranges of frequencies that the mobile phones use.

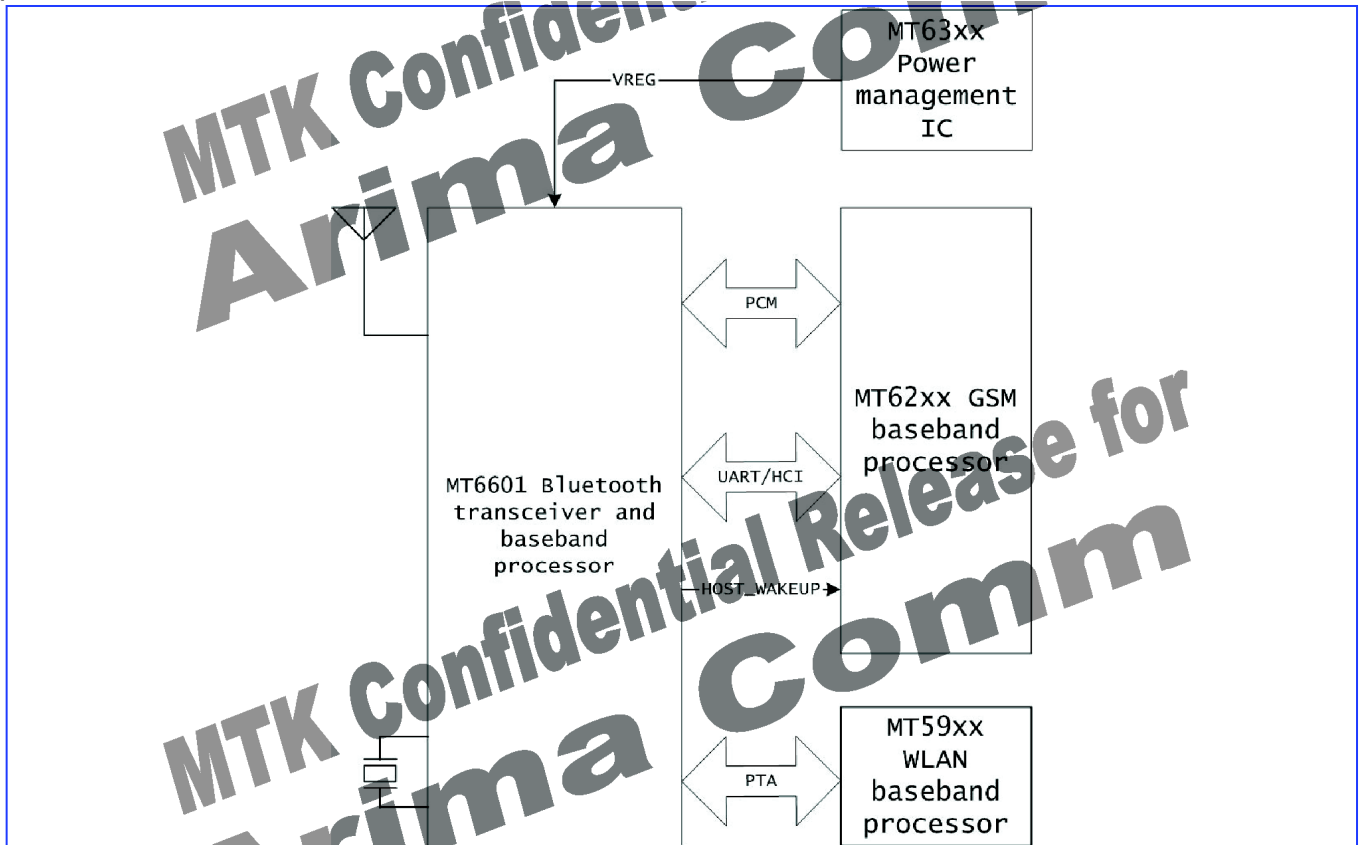


Figure.3-4-2 Mobile phone application.

3.5 PMIC (MT6318)

Power management is one of the most important functions in this PMIC. The power management function applies proper management procedures and control functions to the mobile handset's battery, charger, and power supply. More specifically, the management criterion is to provide power to the mobile phone while extending the standby/active time as long as possible.

The block diagram implemented in PMIC is shown further below to describe the relationships between different states.

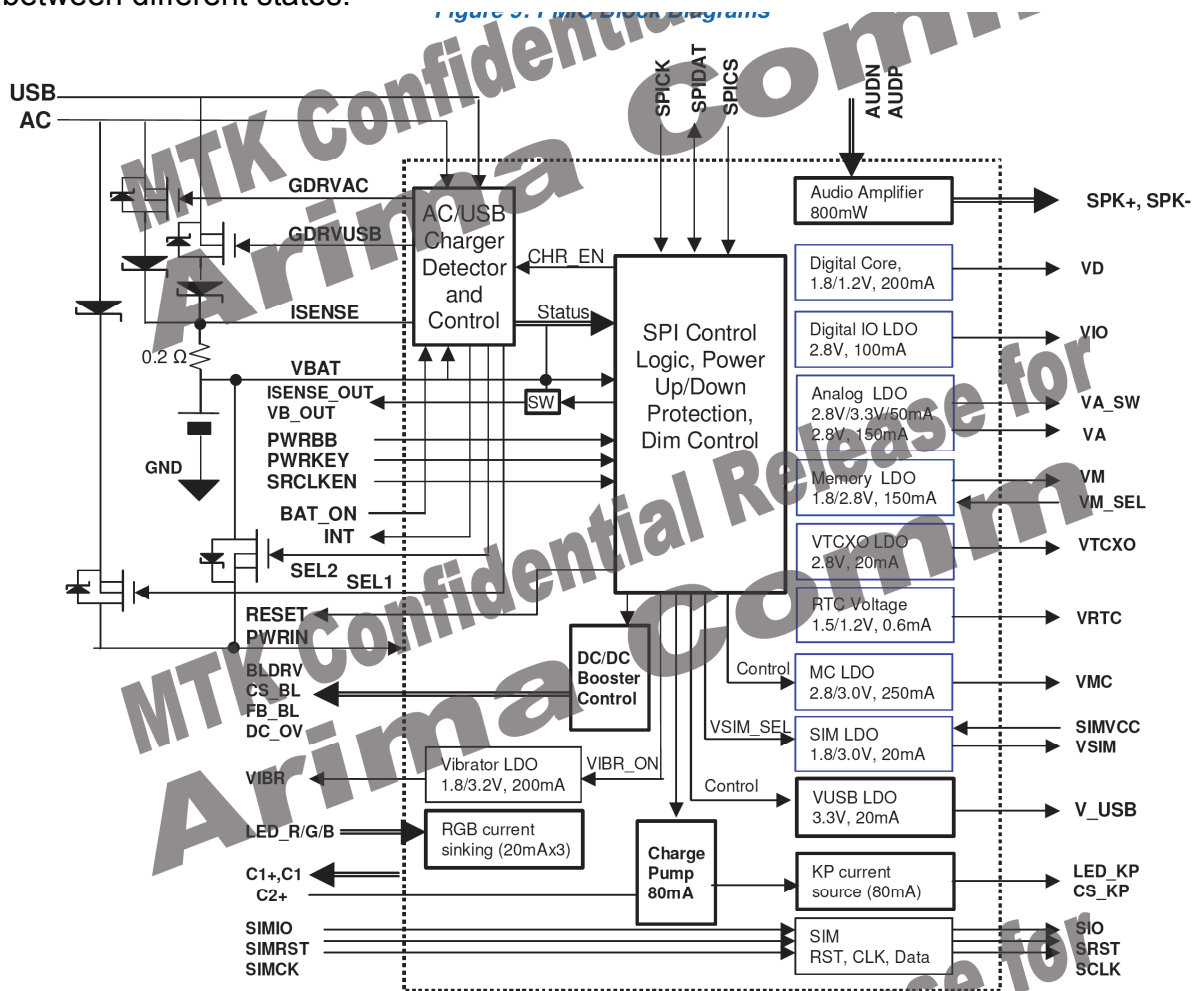


Figure.3-5-1 MT6318 FUNCTIONAL BLOCK DIAGRAM

3.5.1 Features

Handles all GSM/GPRS Baseband Power Management
Input range: 2.8 V ~ 5.0 V
Charger input of up to 15 V
11 LDOs optimized for specific GSM/GPRS subsystems
2-step RTC LDO
600 mW Class AB audio amplifier
Booster for series backlight LED driver
Charge pump for parallel backlight LED driver
SPI interface
Pre-charge indication
Li-ion battery charge function
SIM card interface
RGB LED driver
Vcore for power-saver mode
Over-current and thermal overload protection
Programmable under voltage lockout protection
Power-on reset and start-up timer
96-pin TFBGA package

3.5.2 Applications

GSM/GPRS mobile handsets, basic phones and high-end phones.

3.5.3 General Description

The MT6318 is a power management system chip optimized for GSM/GPRS handsets, especially those based on the MediaTek MT621x/MT622x system solution. MT6318 contains 11 LDOs, one to power each of the critical GSM/GPRS sub-blocks. Sophisticated controls are available for power-up during battery charging, for the keypad interface, and for the RTC alarm. The MT6318 is optimized for maximum battery life.

The 2-step RTC LDO design allows the RTC circuit to stay alive without a battery for several hours.

The MT6318 battery charger can be used with a lithium-ion (Li+) battery.

The SIM interface provides the level shift between SIM card and microprocessor.

The MT6318 is available in a 96-pin TFBGA package.

The operating temperature range is -25°C to +85°C.

3.5.4 Ordering Information

ORDER #	MARKING	TEMP. RANGE	PACKAGE
MT6318A	MT6318A/AY	-25°C to +85°C	TFBGA - 96L

3.6 Memory Module (HYC0UGE0MF1P-5SH0E)

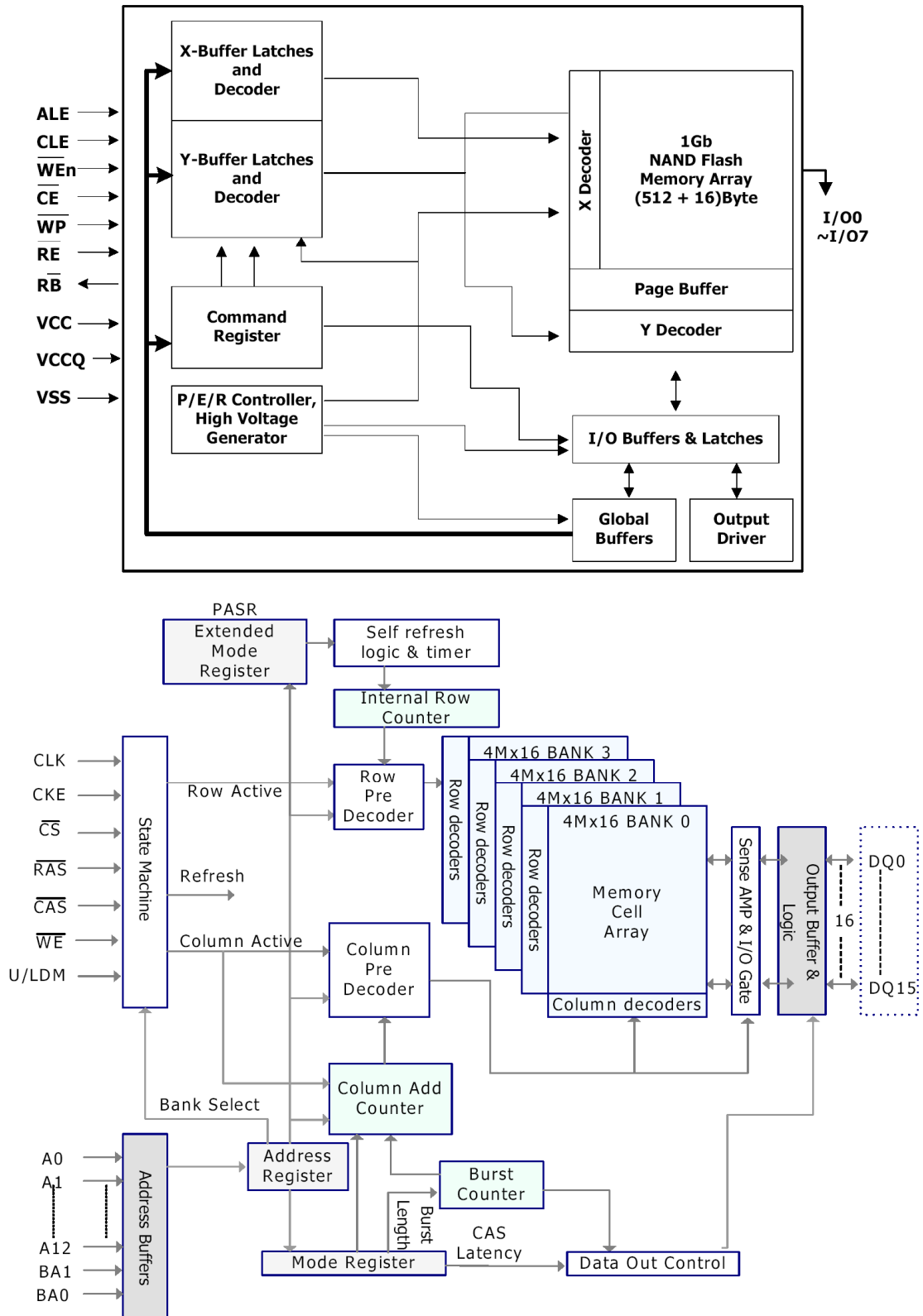


Figure.3-6-1 HYC0UGE0MF1P-5SH0E FUNCTIONAL BLOCK DIAGRAM

The HYC0UGE0MF1(P)-(5/6)S(S/H)0E is suited for mobile communication system application which use in data memory to reduce not only mount area but also power consumption.

The HYNIX HYC0UGE0MF1(P) Series is a Multi Chip Package Memory which combined a 1,107,296,256-bit Nand Flash Memory and a 268,435,456-bit Low Power Synchronous DRAM(Mobile SDRAM).

Combination of HYC0UGE0MF1(P) Series, 1,107,296,256bit NAND Flash memory is organized as 128M x8 bits and the size of a Page is either 528 Bytes (512 + 16 spare) depending on whether the device has a x8 bus width. 256Mbit Mobile SDRAM is a 268,435,456bit CMOS Synchronous Dynamic Random Access Memory. It is organized as 4banks of 4,194,304 x16.

The devices are available in the following packages: 149-Ball BGA package.

SYMBOL	TYPE	DESCRIPTION
1G NAND Flash Device Pin		
I/O0 ~ I/O7	I/O	Input/Output
\overline{CE}	INPUT	Chip Enable
\overline{WE}	INPUT	Write Enable
\overline{RE}	INPUT	Read Enable
ALE	INPUT	Address Latch Enable
CLE	INPUT	Command Latch Enable
\overline{WP}	INPUT	Write Protect
RY/ \overline{BY}	I/O	Ready/Busy
VCCn	Power	Power Supply
512M Mobile SDRAM Device Pin		
CLK	INPUT	Clock : Clock input for Mobile SDRAM
CKE	INPUT	Clock enable for Mobile SDRAM
A0 to A12	INPUT	Address inputs for Mobile SDRAM Row Address : RA0 ~ RA12, Column Address : CA0 ~ CA8 Auto-precharge flag : A10/AP
BA0, BA1	INPUT	Bank Select for Mobile SDRAM
\overline{RAS}	INPUT	Row address strobe for Mobile SDRAM
\overline{CAS}	INPUT	Column address strobe for Mobile SDRAM
\overline{WE}	INPUT	Write enable for Mobile SDRAM
\overline{CS}	INPUT	Chip select for Mobile SDRAM
UDQM	INPUT	Upper data mask enable for Mobile SDRAM
LDQM	INPUT	Lower data mask enable for Mobile SDRAM
VDD	Power	Main power supply for Mobile SDRAM
VDDQ	Power	DQ power supply for Mobile SDRAM
VSS	Ground	Ground
NC	-	Not connection : These pads should be left unconnected

3.7 FM/AM Radio Module

3.7.1 FM Radio Module (Si4702)

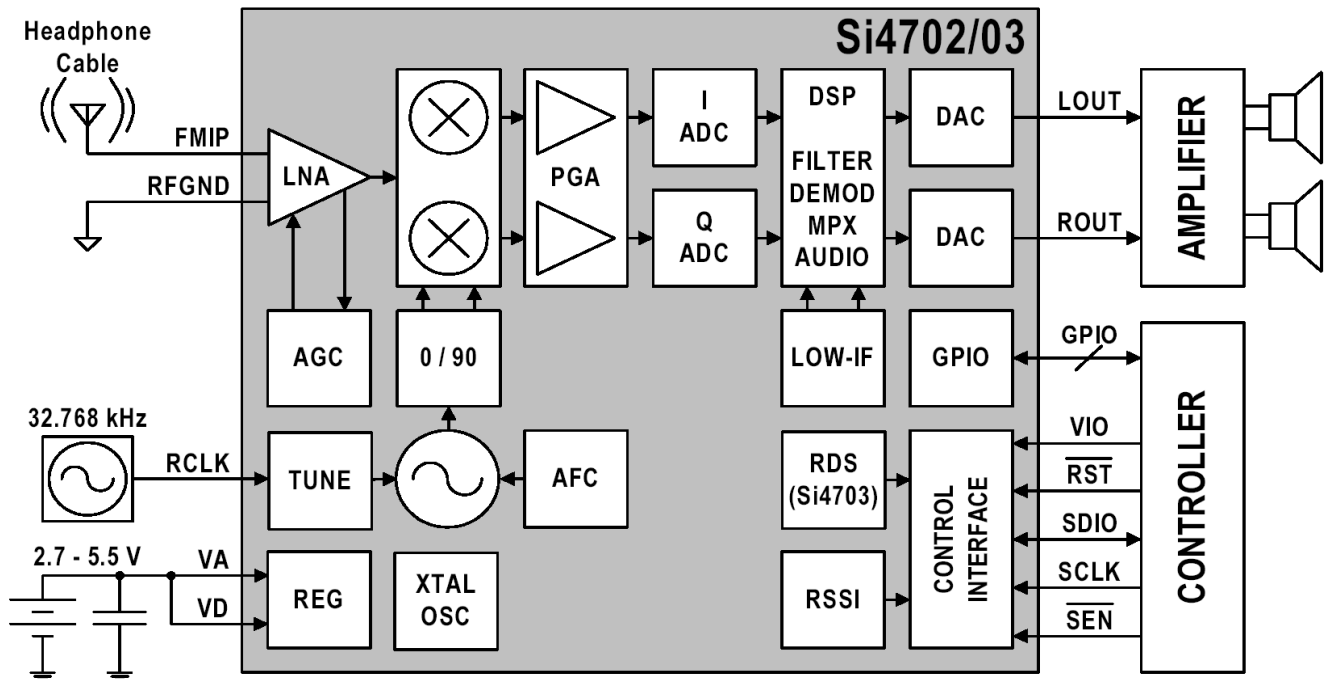


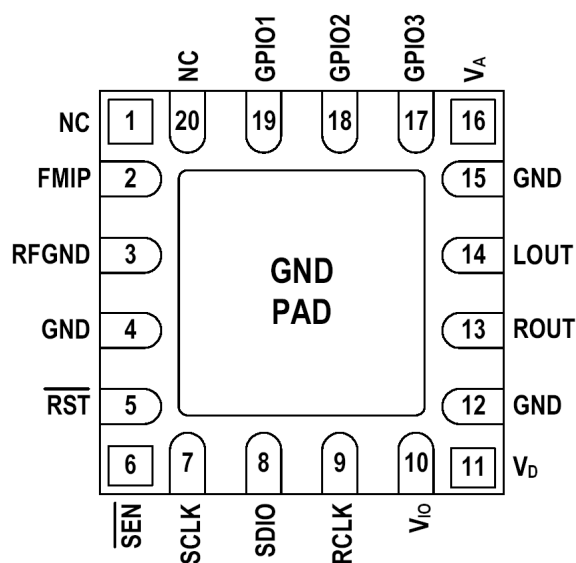
Figure. 3-7-1 Si4702-C19 FM Receiver Block Diagram

The Si4702-C19 extends Silicon Laboratories Si4700/01 FM tuner family, and further increases the ease and attractiveness of adding FM radio reception to mobile devices through small size and board area, minimum component count, flexible programmability, and superior, proven performance. Si4702-C19 software is backwards compatible to existing Si4700/01 and Si4702/03-B16 FM Tuner designs. The Si4702-C19 benefits from proven digital integration and 100% CMOS process technology, resulting in a completely integrated solution. It is the industry's smallest footprint FM tuner IC requiring only 10 mm² board space and one external bypass capacitor.

The device offers significant programmability, and caters to the subjective nature of FM listeners and variable FM broadcast environments world-wide through a simplified programming interface and mature functionality.

The Si4702-C19 is based on the superior, proven performance of Silicon Laboratories' Aero architecture offering unmatched interference rejection and leading sensitivity. The device uses the same programming interface as the Si4701 and supports multiple bus-modes. Power management is also simplified with an integrated regulator allowing direct connection to a 2.7 to 5.5 V battery.

The Si4702-C19 device's high level of integration and complete FM system production testing increases quality to manufacturers, improves device yields, and simplifies device manufacturing and final testing.



Top View

Pin Number(s)	Name	Description
1, 20	NC	No Connect. Leave floating.
2	FMIP	FM RF inputs.
3	RFGND	RF ground. Connect to ground plane on PCB.
4, 12, 15, PAD	GND	Ground. Connect to ground plane on PCB.
5	$\overline{\text{RST}}$	Device reset input (active low).
6	$\overline{\text{SEN}}$	Serial enable input (active low).
7	SCLK	Serial clock input.
8	SDIO	Serial data input/output.
9	RCLK	External reference oscillator input.
10	V_{IO}	I/O supply voltage.
11	V_D	Digital supply voltage. May be connected directly to battery.
13	ROUT	Right audio output.
14	LOUT	Left audio output.
16	V_A	Analog supply voltage. May be connected directly to battery.
17, 18, 19	GPIO3, GPIO2, GPIO1	General purpose input/output.

3.7.2 AM Radio module (Si4703x)

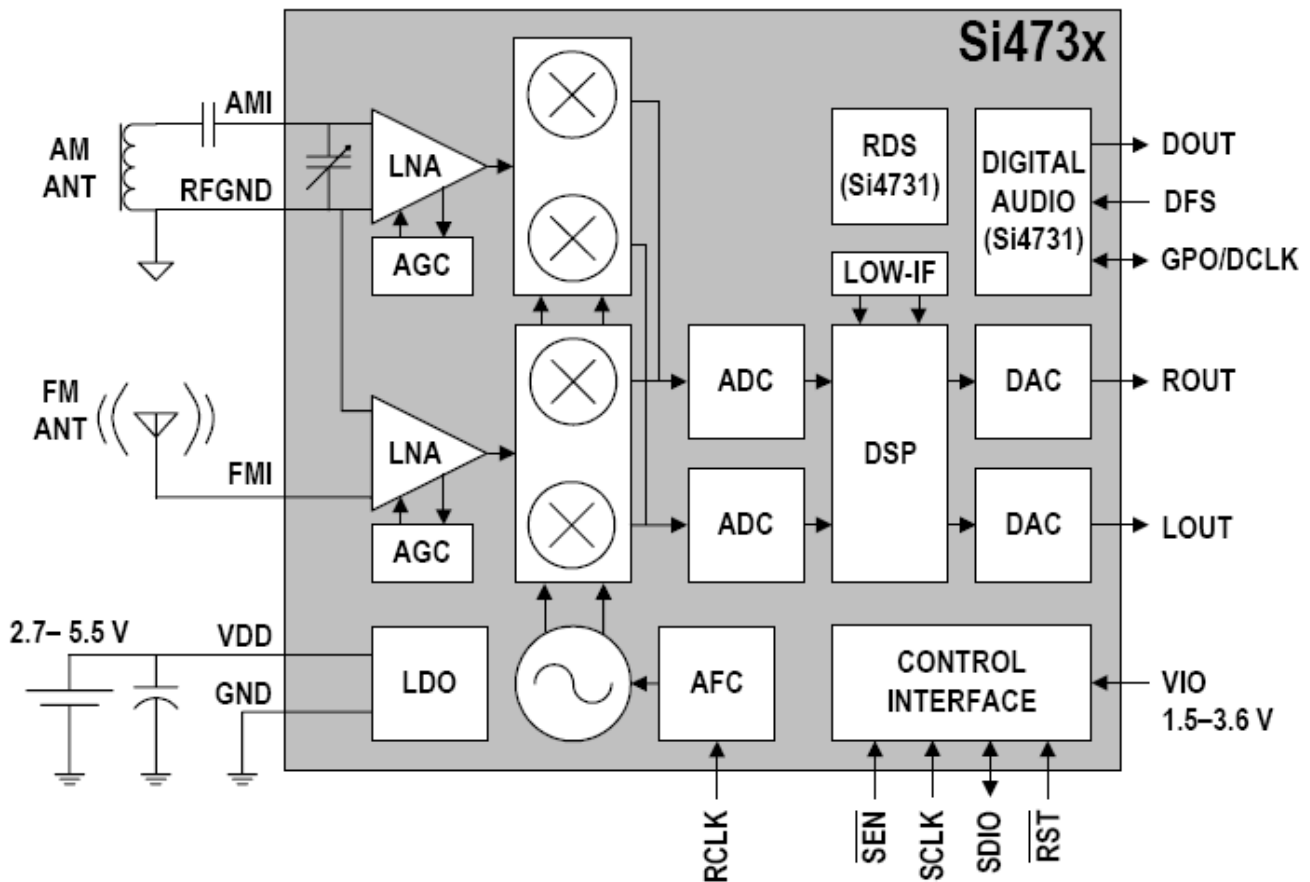
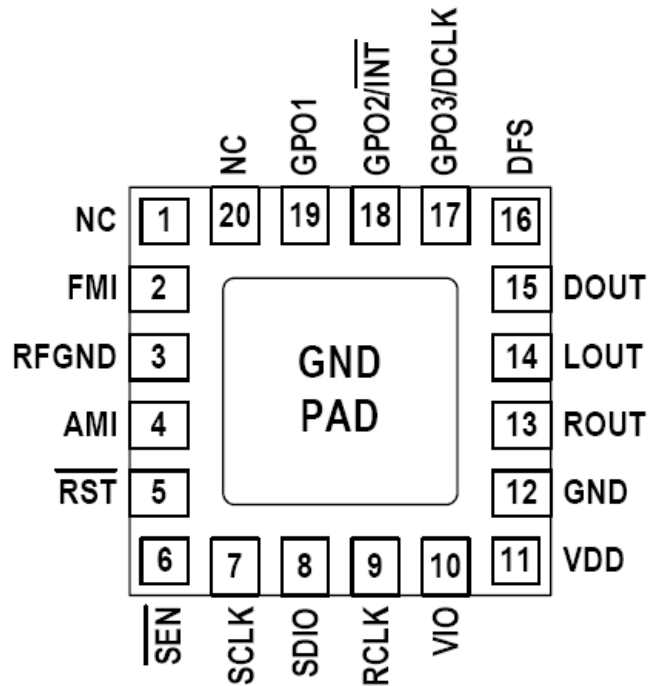


Figure. 3-7-2 Si4703-B20 FM Receiver Block Diagram

The Si4730/31 is the industry's first fully integrated, 100% CMOS AM/FM radio receiver IC. Offering unmatched integration and PCB space savings, the Si4730/31 requires only two external components and less than 15 mm² of board area, excluding the antenna inputs. The Si4730/31 AM/FM radio provides the space savings and low power consumption necessary for portable devices while delivering the high performance and design simplicity desired for all AM/FM solutions.

Leveraging Silicon Laboratories' proven and patented Si4700/01 FM tuner's digital low intermediate frequency (low-IF) receiver architecture, the Si4730/31 delivers superior RF performance and interference rejection in both AM and FM bands. The high integration and complete system production test simplifies design-in, increases system quality, and improves manufacturability.

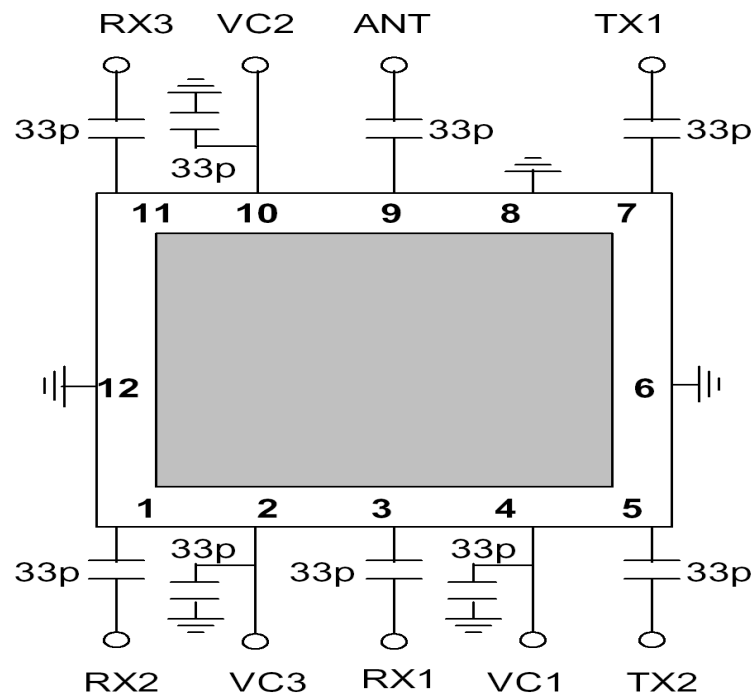
The Si4730/31 is a feature-rich solution that includes advanced seek algorithms, soft mute, auto-calibrated digital tuning, and FM stereo processing. In addition, the Si4730/31 provides analog and digital audio outputs and a programmable reference clock. The device supports I²C-compatible 2-wire control interface, SPI, and a Si4700/01 backwards-compatible 3-wire control interface.



Pin Number(s)	Name	Description
1, 20	NC	No connect. Leave floating.
2	FMI	FM RF inputs. FMI should be connected to the antenna trace.
3	RFGND	RF ground. Connect to ground plane on PCB.
4	AMI	AM RF input. AMI should be connected to the AM antenna.
5	$\overline{\text{RST}}$	Device reset (active low) input.
6	$\overline{\text{SEN}}$	Serial enable input (active low).
7	SCLK	Serial clock input.
8	SDIO	Serial data input/output.
9	RCLK	External reference oscillator input.
10	V_{IO}	I/O supply voltage.
11	V_{DD}	Supply voltage. May be connected directly to battery.
12, GND PAD	GND	Ground. Connect to ground plane on PCB.
13	ROUT	Right audio line output in analog output mode.
14	LOUT	Left audio line output in analog output mode.
15	DOUT	Digital output data in digital output mode.
16	DFS	Digital frame synchronization input in digital output mode.
17	GPO3/DCLK	General purpose output, crystal oscillator, or digital bit synchronous clock input in digital output mode.
18	$\text{GPO2}/\overline{\text{INT}}$	General purpose output or interrupt pin.
19	GPO1	General purpose output.

3.8 Antenna Switch Module (ESHS-B085TB)

Top View



PIN LAYOUT

PIN1	DCS RX	PIN8	GND
PIN2	VC3	PIN9	ANT
PIN3	GSM850/900 RX	PIN10	VC2
PIN4	VC1	PIN11	PCS RX
PIN5	DCS/PCS TX	PIN12	GND
PIN6	GND	PIN13	GND
PIN7	GSM850/900 TX		

3.9 LCD Interface

LCM Cnnector

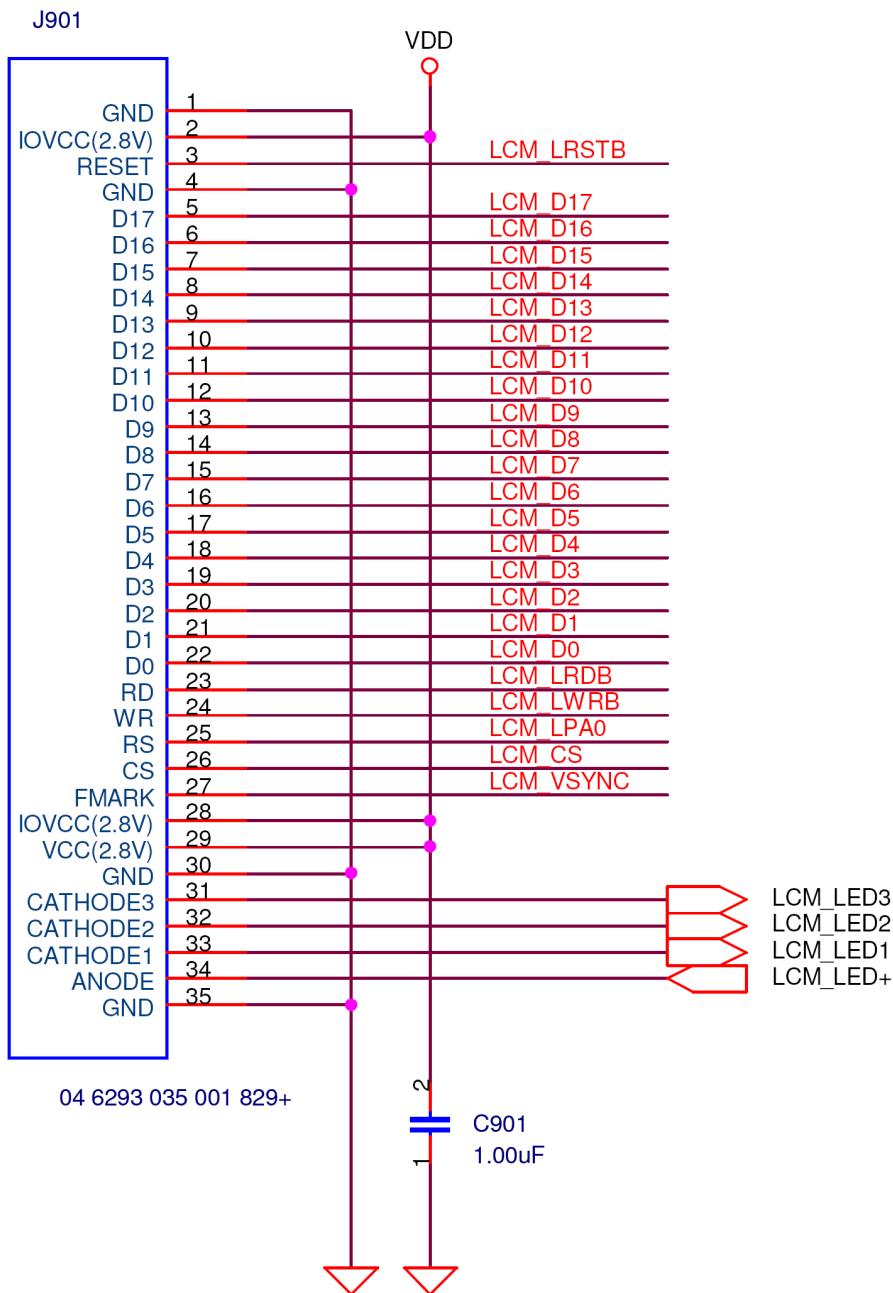


Figure.3-9-1 LCD Interface

The **IM200DBNDA** model is a Color TFT LCD supplied by LG Innotek.

This main Module has a 2.0 inch diagonally measured active display area with 240(RGB)X320 resolution. Each pixel is divided into Red, Green and Blue sub-pixels and dots which are arranged in vertical stripes.

Main LCD color is determined with 262,144 colors signal for each pixel.

The **IM200DBNDA** has been designed to apply the interface method that enables low power, high speed, and high contrast.

The **IM200DBNDA** is intended to support applications where thin thickness, wide viewing angle and low power are critical factors and graphic displays are important.

Pin No.	Symbol	Description	Remark
1	GND	Ground	-
2	IOVCC	Power Supply for Driver IC Digital I/O	-
3	RESET	LCD RESET PIN	-
4	GND	Ground	-
5	D17	Data17	-
6	D16	Data16	-
7	D15	Data15	-
8	D14	Data14	-
9	D13	Data13	-
10	D12	Data12	-
11	D11	Data11	-
12	D10	Data10	-
13	D9	Data9	-
14	D8	Data8	-
15	D7	Data7	-
16	D6	Data6	-
17	D5	Data5	-
18	D4	Data4	-
19	D3	Data3	-
20	D2	Data2	-
21	D1	Data1	-
22	D0	Data13	-
23	RD	Data0	-
24	WR	LCD WR PIN	-
25	RS	LCD RS PIN	-
26	CS	LCD CS PIN	-
27	FMARK	LCD FMARK PIN	-
28	IOVCC	Power Supply for Driver IC Digital I/O	-
29	VCC	Power Supply for Driver IC Driving	-
30	GND	Ground	-
31	CATHODE3	BLU LED CATHODE3	-
32	CATHODE2	BLU LED CATHODE2	-
33	CATHODE1	BLU LED CATHODE1	-
34	ANODE	BLU LED ANODE	-
35	GND	Ground	-

3.10 SIM& Micro SD Card Interface

SIM Card

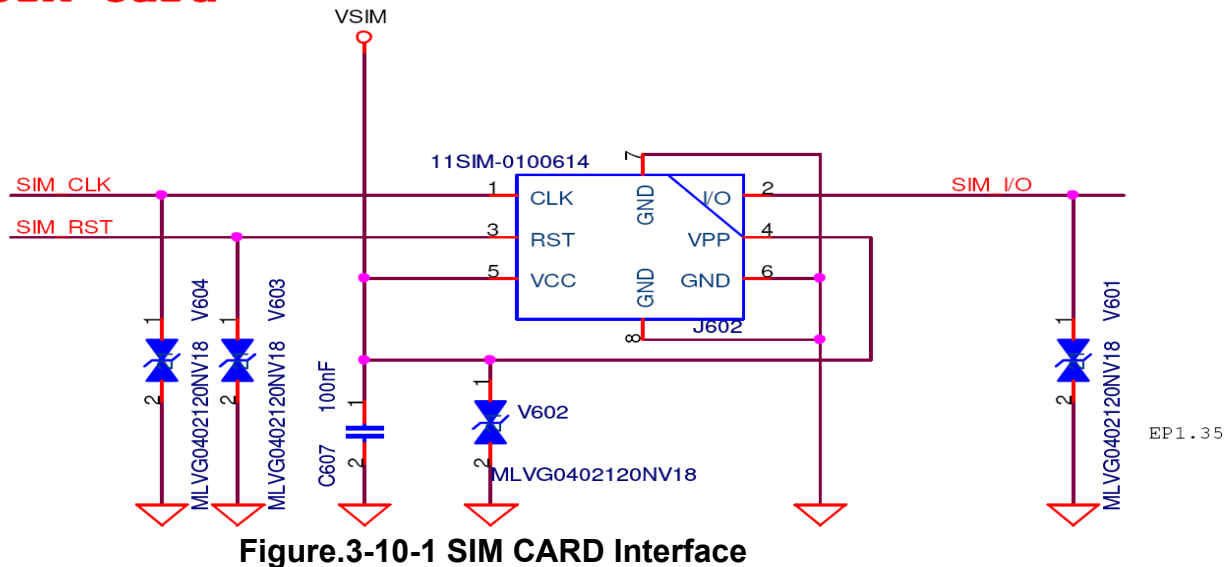


Figure.3-10-1 SIM CARD Interface

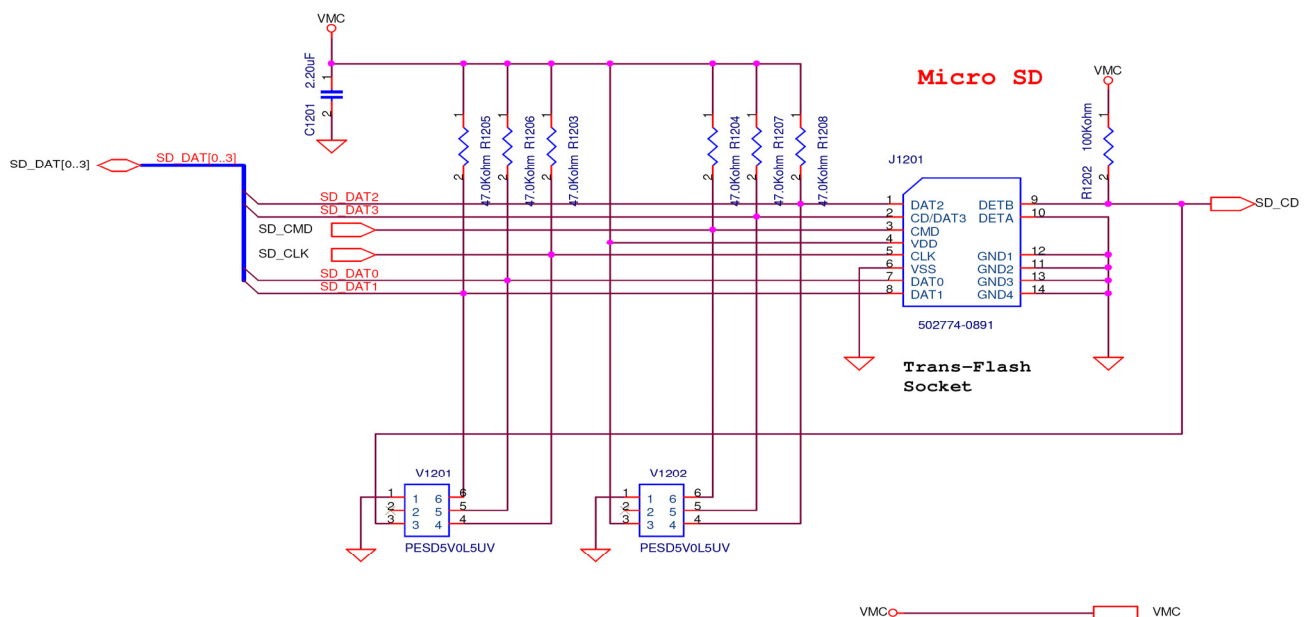


Figure.3-10-2 Micro SD CARD Interface

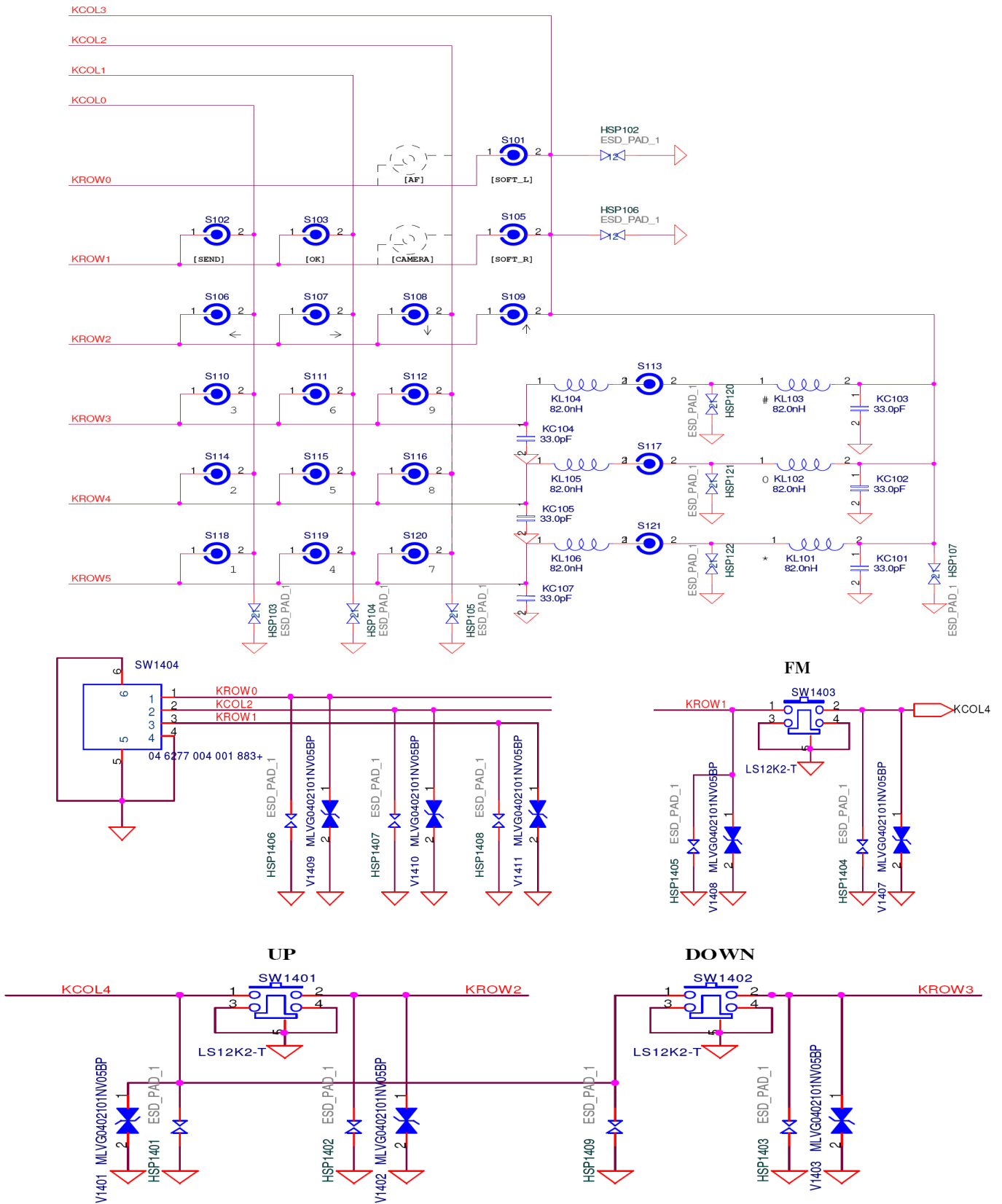
The MT6229 contains a dedicated smart card interface to allow the MCU access to the SIM card. It can operate via 5 terminals, using SIMVCC, SIMSEL, SIMRST, SIMCLK and SIMDATA.

The SIMVCC is used to control the external voltage supply to the SIM card and SIMSEL determines the regulated smart card supply voltage. SIMRST is used as the SIM card reset signal. SIMDATA and SIMCLK are used for data exchange purpose.

The SIM interface acts as a half duplex asynchronous communication port and its data format is composed of ten consecutive bits: a start bit in state Low, eight information bits, and a tenth bit used for parity checking.

3.11 KEYPAD Interface

KEY PAD



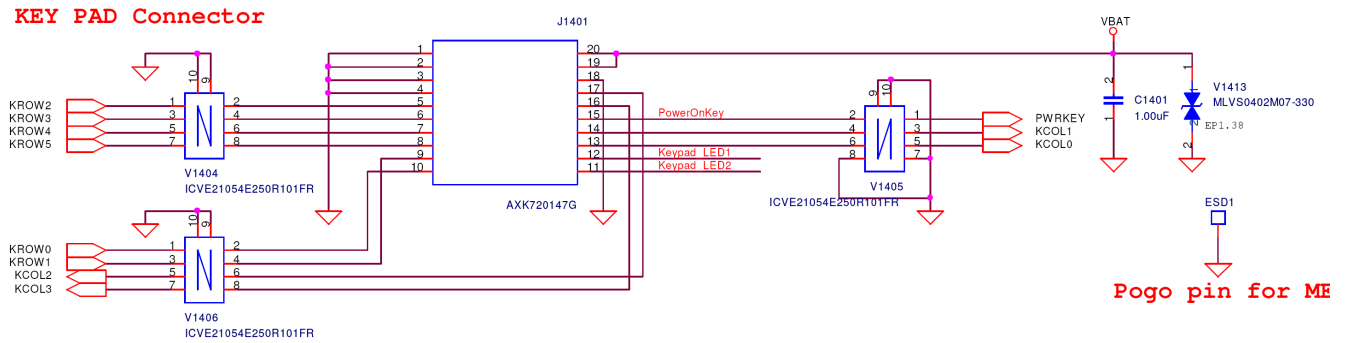


Figure.3-11-1. KEYPAD Interface

The keypad can be divided into two parts: one is the keypad interface including 7 columns and 6 rows; the other is the key detection block which provides key pressed, key released and de-bounce mechanisms. Each time the key is pressed or released, i.e. something different in the 7 x 6 matrix, the key detection block senses the change and recognizes if a key has been pressed or released. Whenever the key status changes and is stable, a KEYPAD IRQ is issued.

The MCU can then read the key(s) pressed directly in KP_HI_KEY, KP_MID_KEY and KP_LOW_KEY registers. To ensure that the key pressed information is not missed, the status register in keypad is not read-cleared by APB read command. The status register can only be changed by the key-pressed detection FSM.

3.12 Battery Charging Block Interface

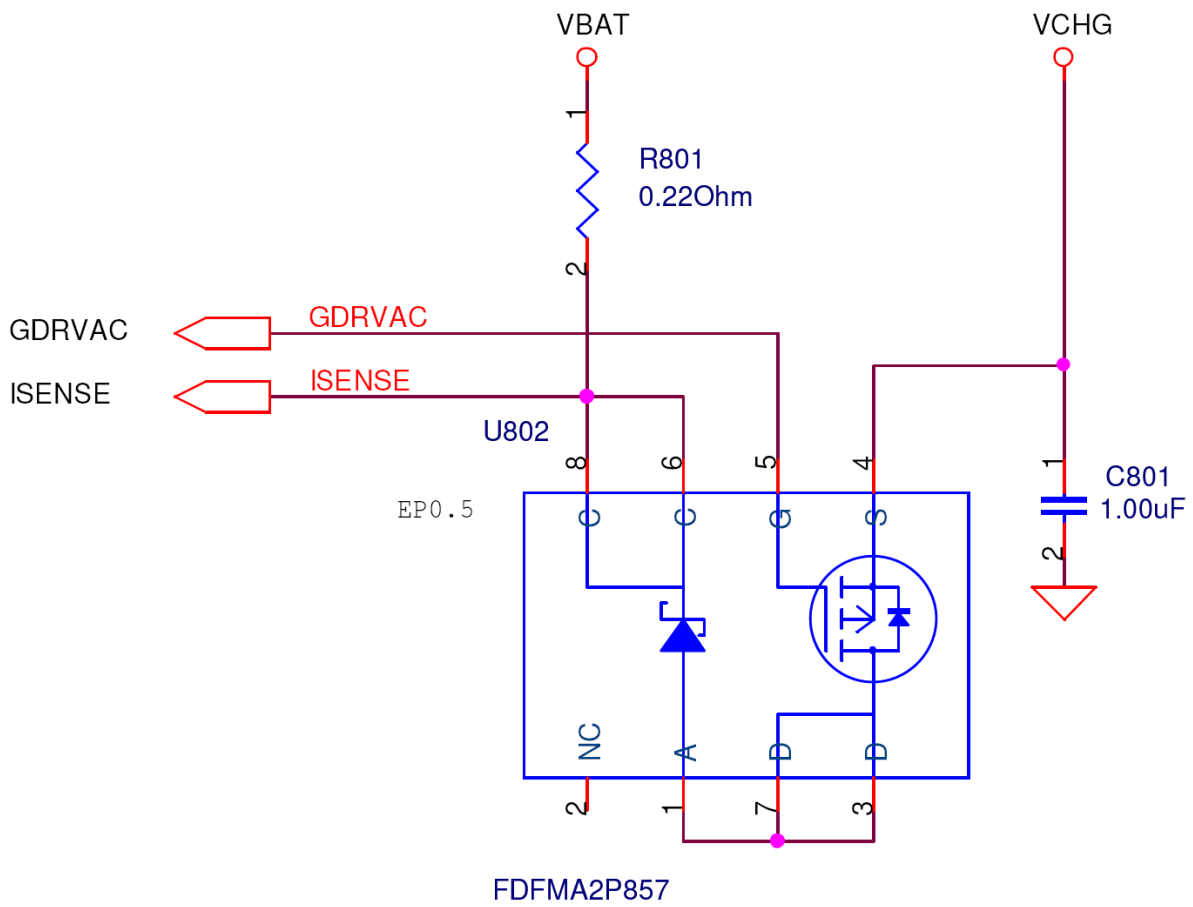


Figure.3-12-1 Charging IC Interface

3.13 Audio Interface

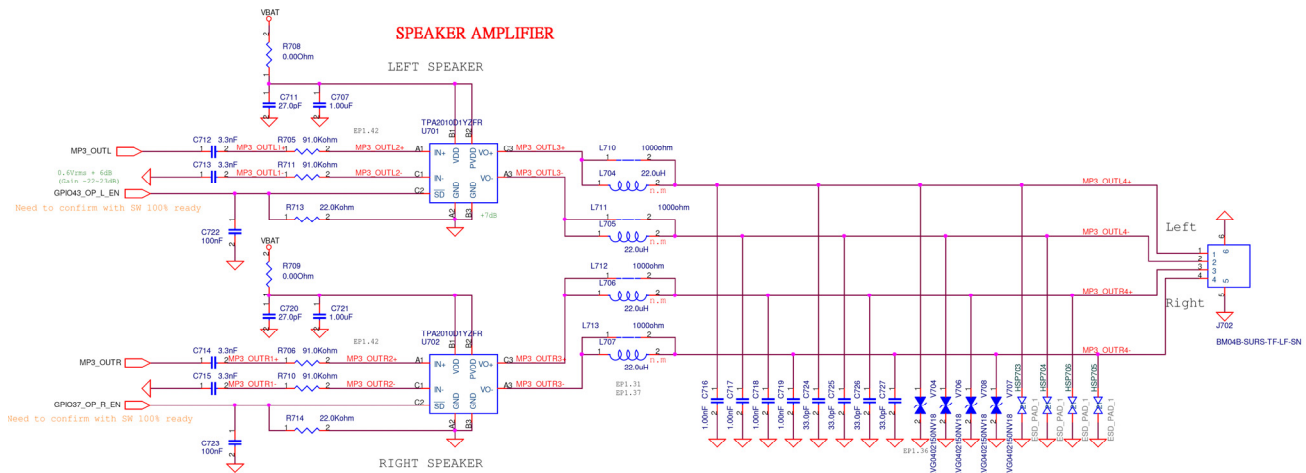


Figure.3-13-1 Main Speaker Interface

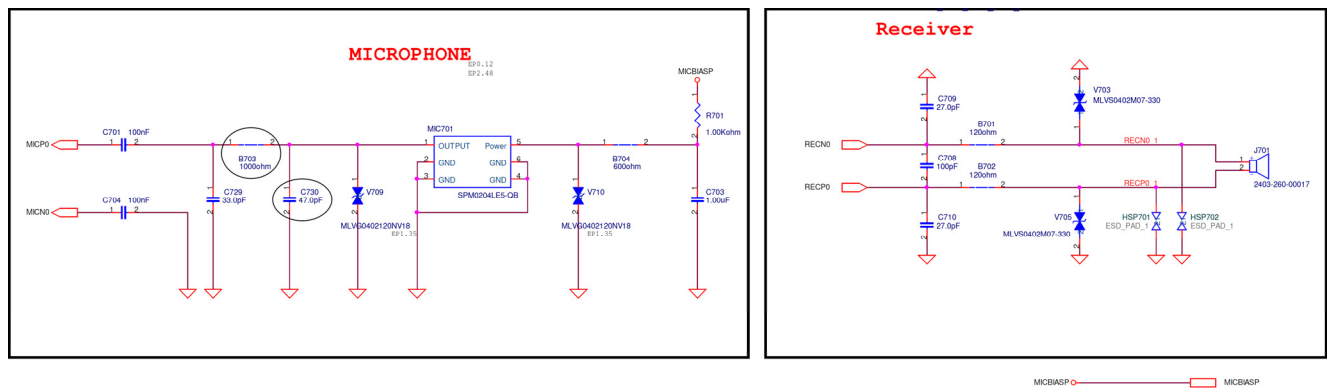


Figure.3-13-2 Main Microphone & Receiver Interface

The TPA2010D1 is a 2.5-W high efficiency filter-free class-D audio power amplifier in a 1.45 mm×1.45mm wafer chip scale package(WCSP) that requires only three external components. Features like 88% efficiency, -75_dB PSRR, improved RF-rectification immunity, and 8mm² total PCB area make the TPA2010D1 ideal for cellular handsets. A fast start-up time of 1ms with minimal pop makes the TP2010d1 ideal for PDA applications.

In cellular handsets, the earpiece, speaker phone, and melody ringer can each be driven by the TPA2010D1. The TPA2010d1 allows independent gain while summing signals from separate sources, and has a low 36μV noise floor A-weight.

3.14 Key LED Interface

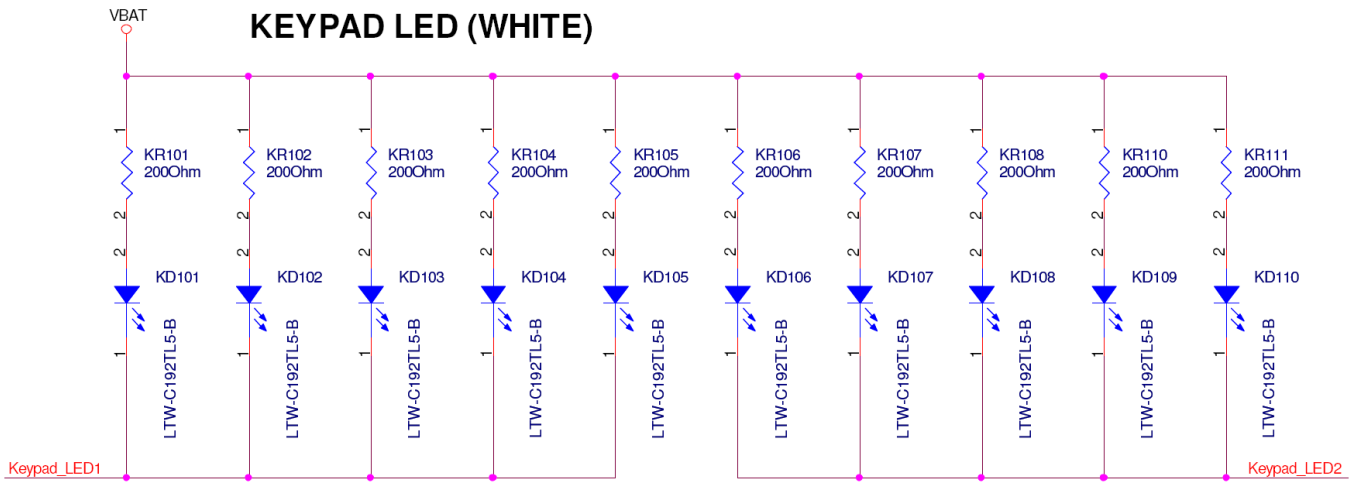


Figure.3-14-1KEYPAD LED Interface

This handset has 10 LEDs that illuminates white color.

Control signal is controlled by MT6229with PMIC and handset has 3 methods, ON, OFF, Dimming

3.15 Vibrator Interface

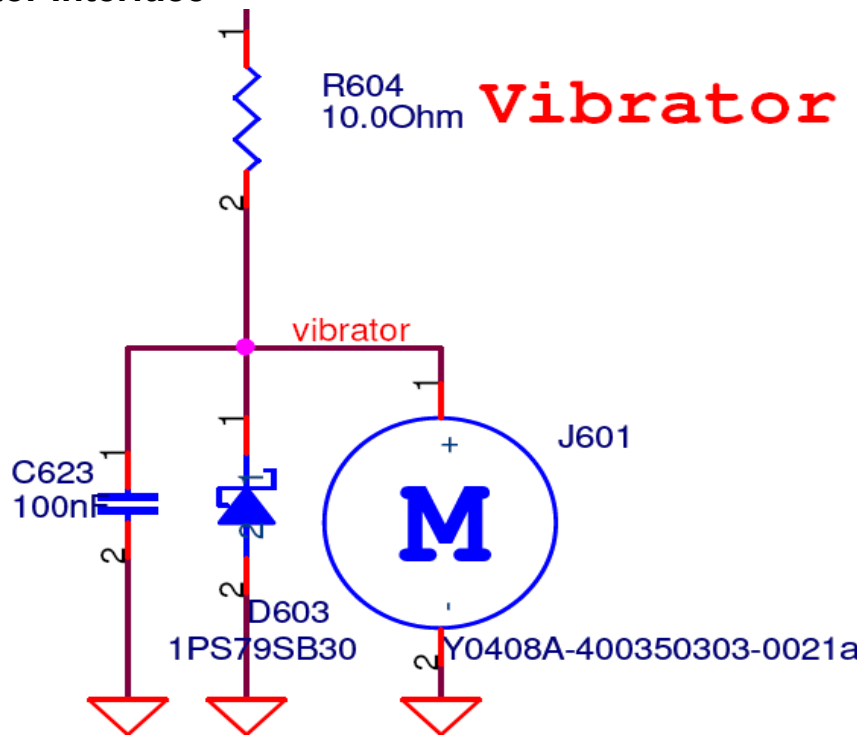


Figure.3-15-1Vibrator Interface

This handset has Vibrator operation. Control signal is controlled by MT6229 with PMIC

3.16 Camera Interface

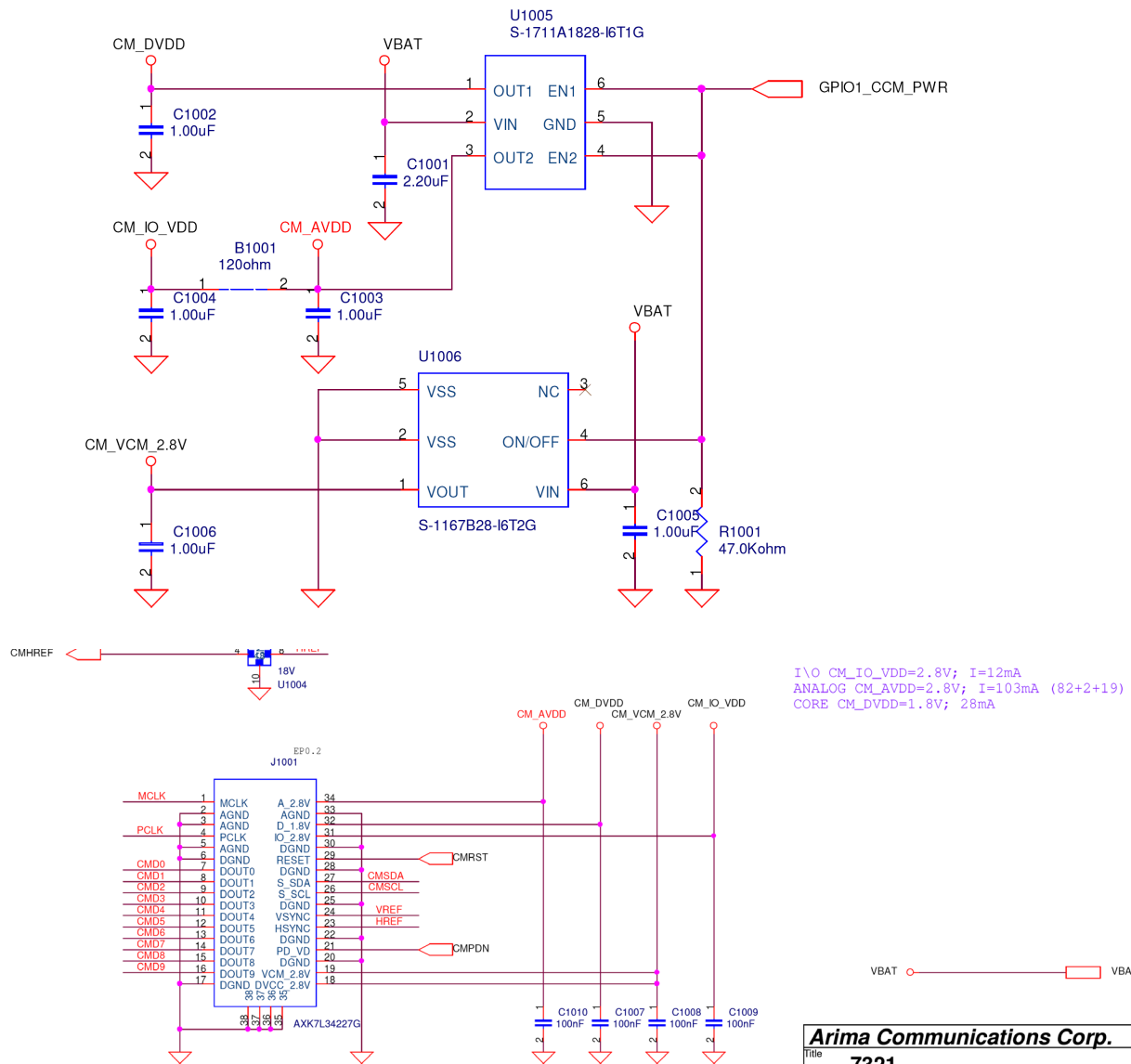


Figure.3-16-1Camera Interface

3.16.1 Pin Description

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	MCLK	System Clock	18	DVCC (2.8V)	VCM Driver Power 2.8V
2	AGND	Analog Ground	19	VCM (2.8V)	Actuator Power 2.8V
3	AGND	Analog Ground	20	DGND	Digital Ground
4	PCLK	Pixel Clock	21	PD	VCM Driver Power Down
5	AGND	Analog Ground	22	DGND	Digital Ground
6	DGND	Digital Ground	23	HSYNC	Line_Valid
7	DOUT0	Data Output0	24	VSYNC	Frame_Valid
8	DOUT1	Data Output1	25	DGND	Digital Ground
9	DOUT2	Data Output2	26	S_SCL	I2C for Clock
10	DOUT3	Data Output3	27	S_SDA	I2C for Data
11	DOUT4	Data Output4	28	DGND	Digital Ground
12	DOUT5	Data Output5	29	RESET	System Reset
13	DOUT6	Data Output6	30	DGND	Digital Ground
14	DOUT7	Data Output7	31	IO (2.8V)	IO Power 2.8V
15	DOUT8	Data Output8	32	DVDD (1.8V)	Core Power 1.8V
16	DOUT9	Data Output9	33	AGND	Analog Ground
17	DGND	Digital Ground	34	AVDD (2.8V)	Analog Power 2.8V

3.16.2 Major specifications

Item	Parameter	Value	Unit
Electrical Feature	Operating Voltage	2.4 ~ 3.1(Analog)	V
		1.7 ~1.9(Digital)	V
		2.4 ~ 3.1(I/O)	V
	Power Consumption	220(Typ)	mW
	Sleep Mode	5	mW
	Input Clock	6 ~ 48	MHz
	Frame Rate	15fps _{Max} @ QXGA, 64M Pclk	fps
		47fps _{Max} @ XGA, 64M Pclk Skipping	fps
		37fps _{Max} @ XGA, 64M Pclk Binning	fps
	Operation Temperature	-30 °C to + 70 °C	°C
	Output Data Interface	Parallel Interface	
	Output Video Mode	VGA, SVGA,XGA,SXVGA,UXGA, QXGA	
Optical Feature	Optical Format	1 / 4 "	Inch
	Lens Construction	1G3P	
	MTF	0.0F	47.2% at 220 lp/mm
		0.8F	49.3% at 160 lp/mm
	Aperture	2.8	
	View Angle	60.2° (D)	°
	Focus Area	10 _{cm} ~ ∞	cm
	TV Distortion	Less than – 0.32%	
Pixel	Active Pixels	2064(H) X 1552(V)	
	Color Filter Array	RGB Bayer Pattern	
Function Feature	<ul style="list-style-type: none"> ▪ Auto Black Level Calibration. ▪ Superior low-light performance. ▪ Low Dark Current. ▪ Integrated color/lens shading correction. 		

4. Trouble Shooting

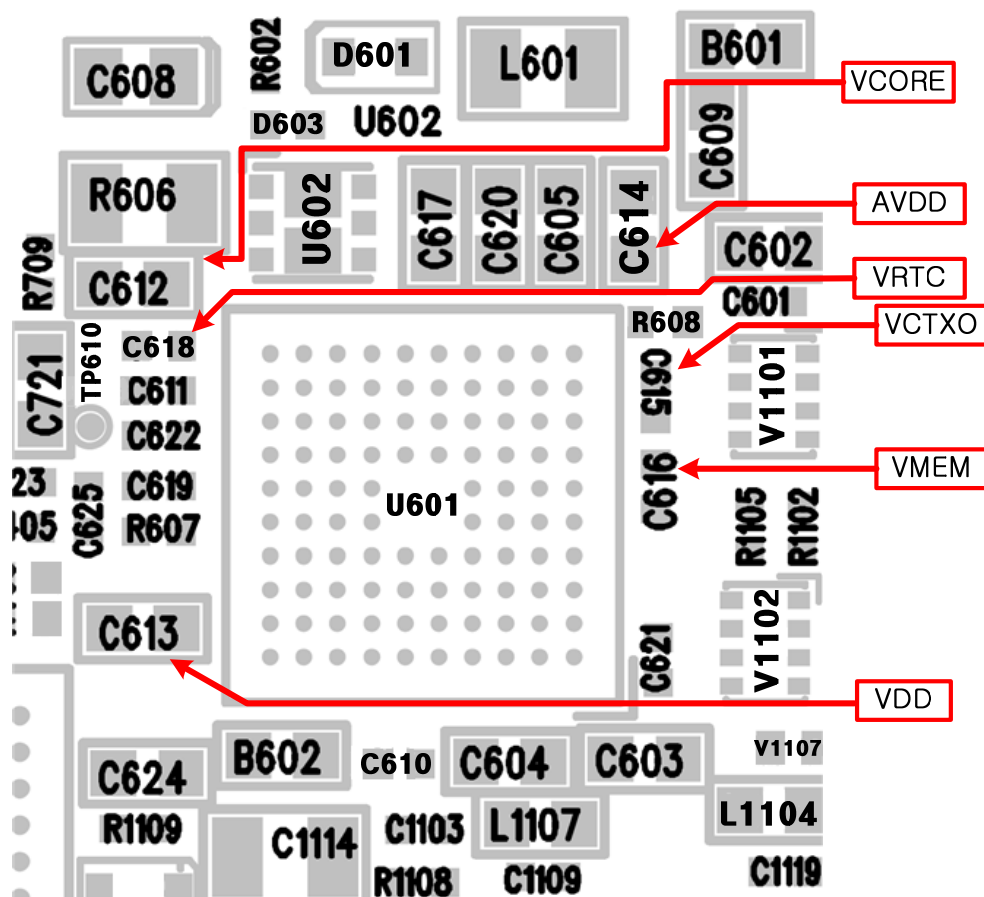
1.1 Power On Trouble

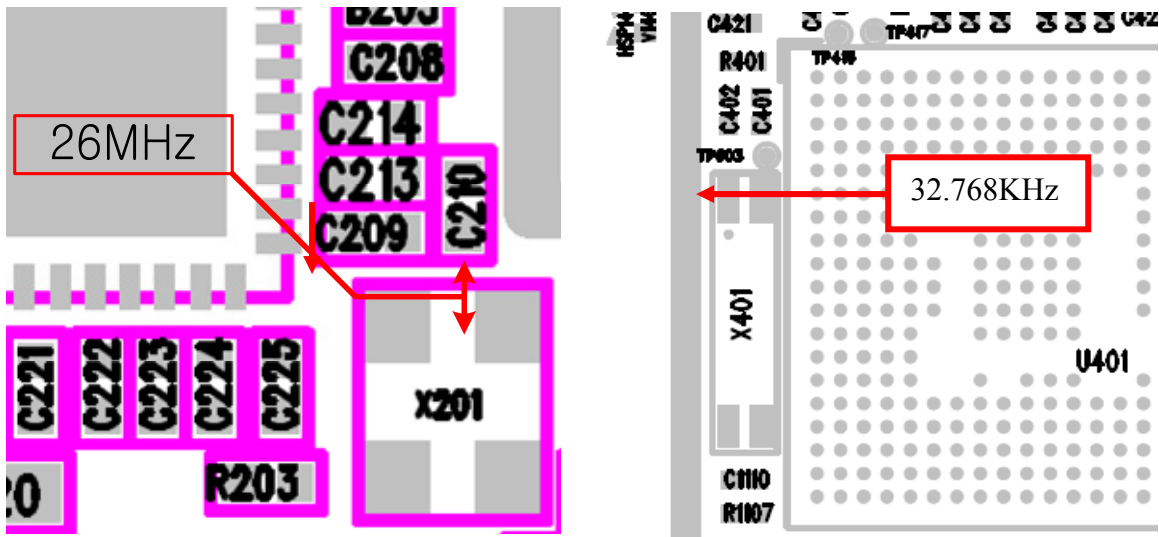
1.1.1 Test Point

Check Points:

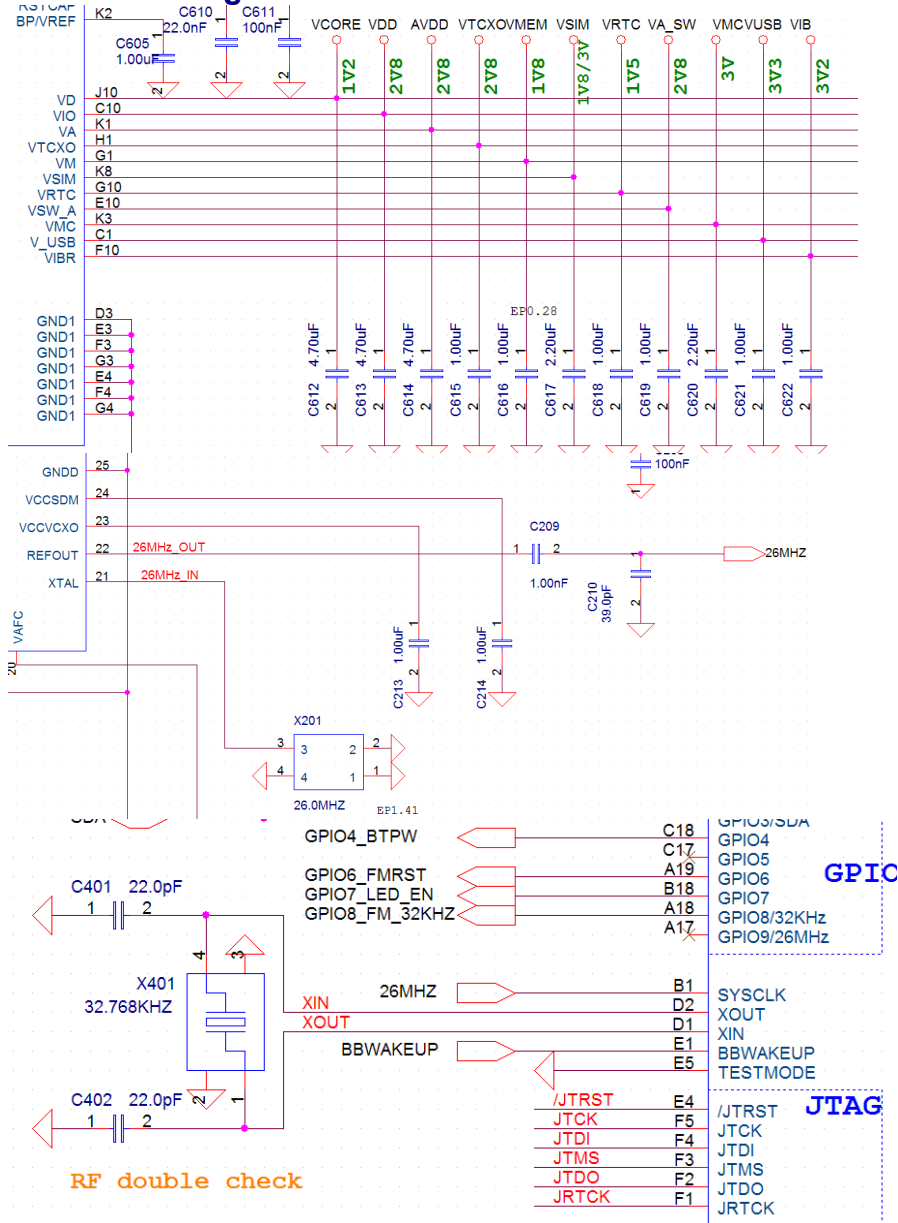
- Battery Voltage(Need to over 3.35V)
- Power-On key detection(PWRON signal)
- Outputs of LDOs U601
- Oscillate frequency of X401 and X201

	Voltage	PART
VDD	2.8V	TP1(C613)
VMEM	2.8V	TP2(C616)
AVDD	2.8V	TP3(C614)
VCORE	1.8V	TP4(C612)
VCTXO	2.8V	TP5(C615)
VRTC	1.5V	TP6(C618)

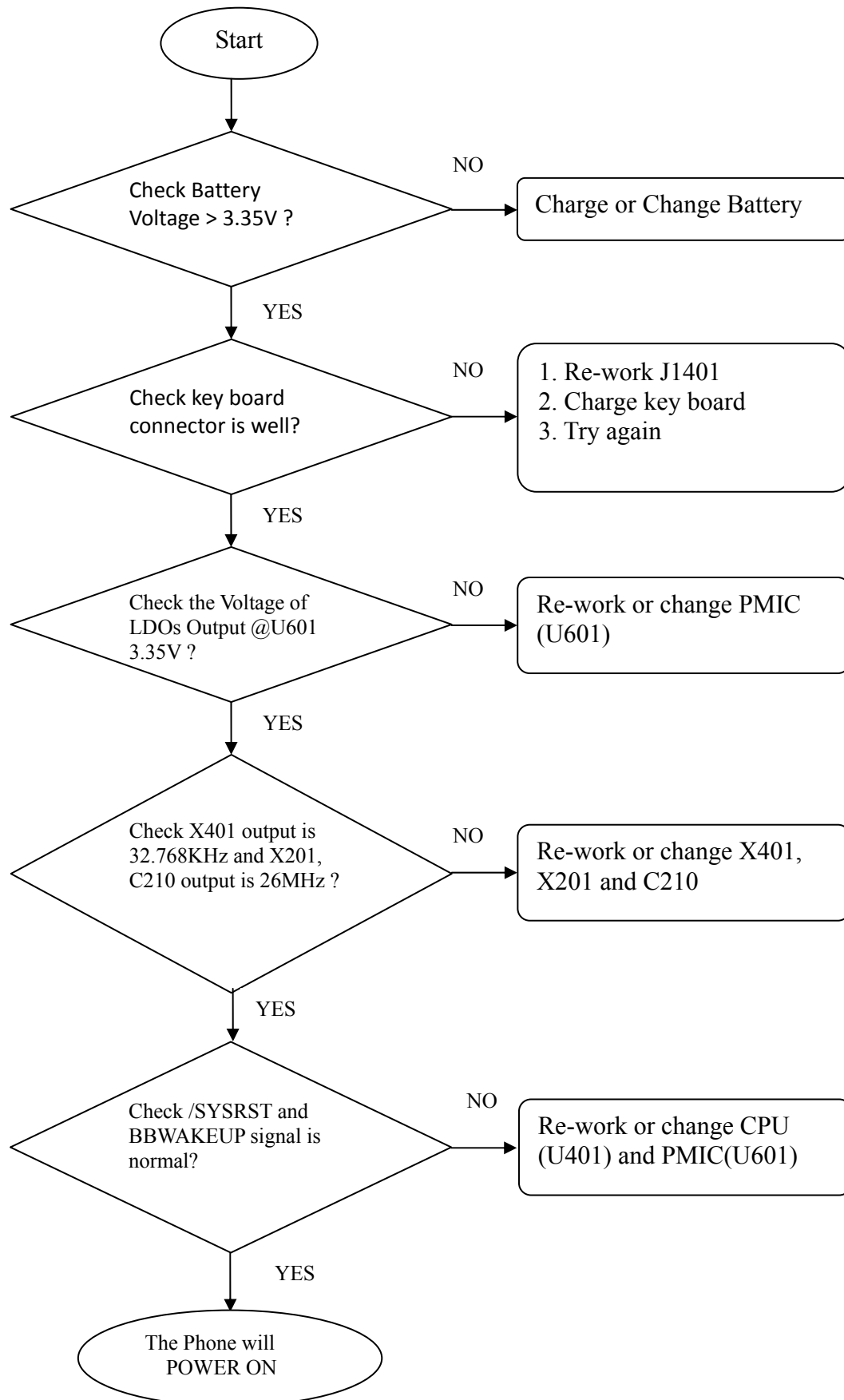




1.1.2 Circuit Diagram

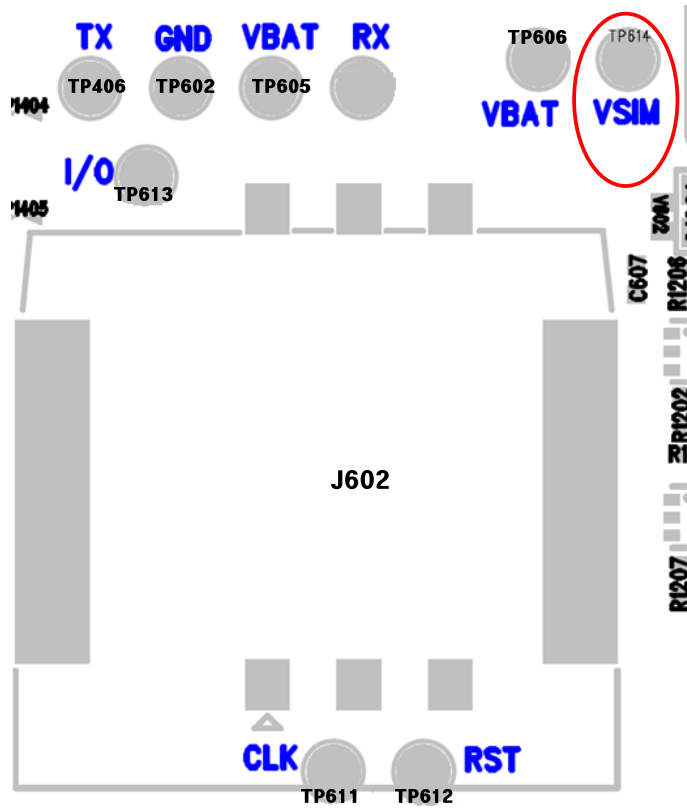


1.1.3 Checking Flow

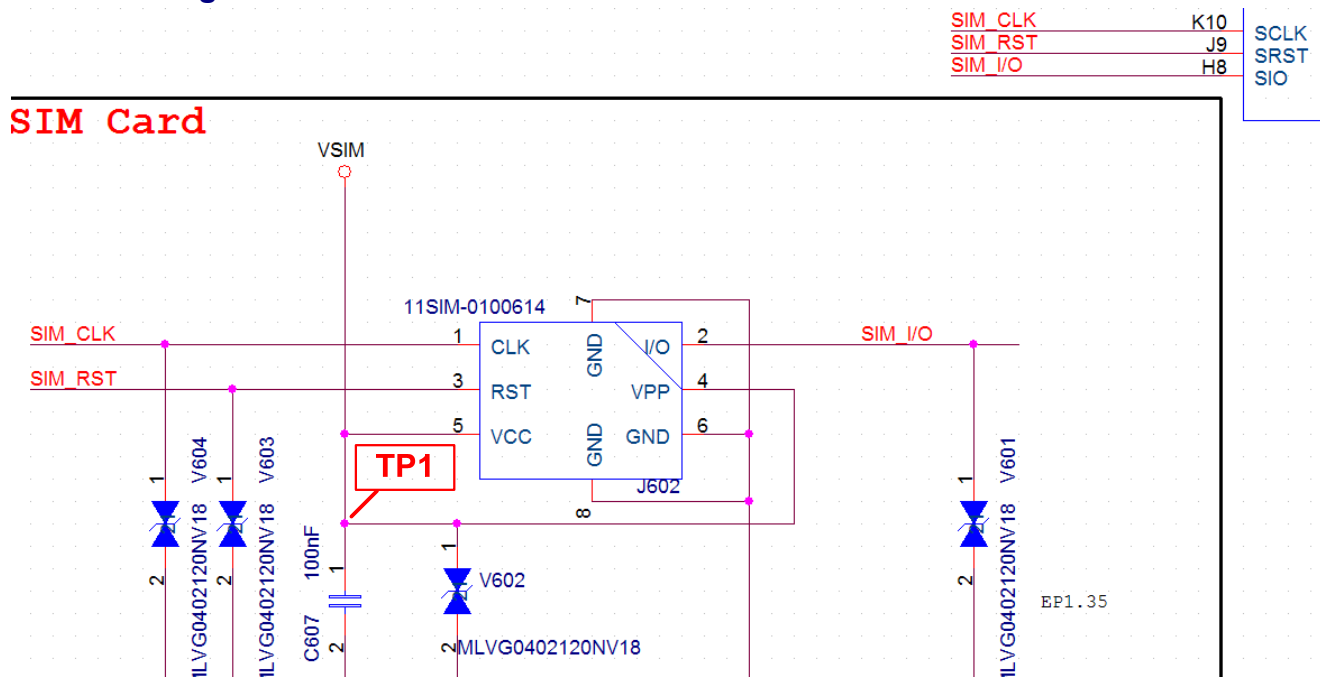


1.2 SIM Card Trouble

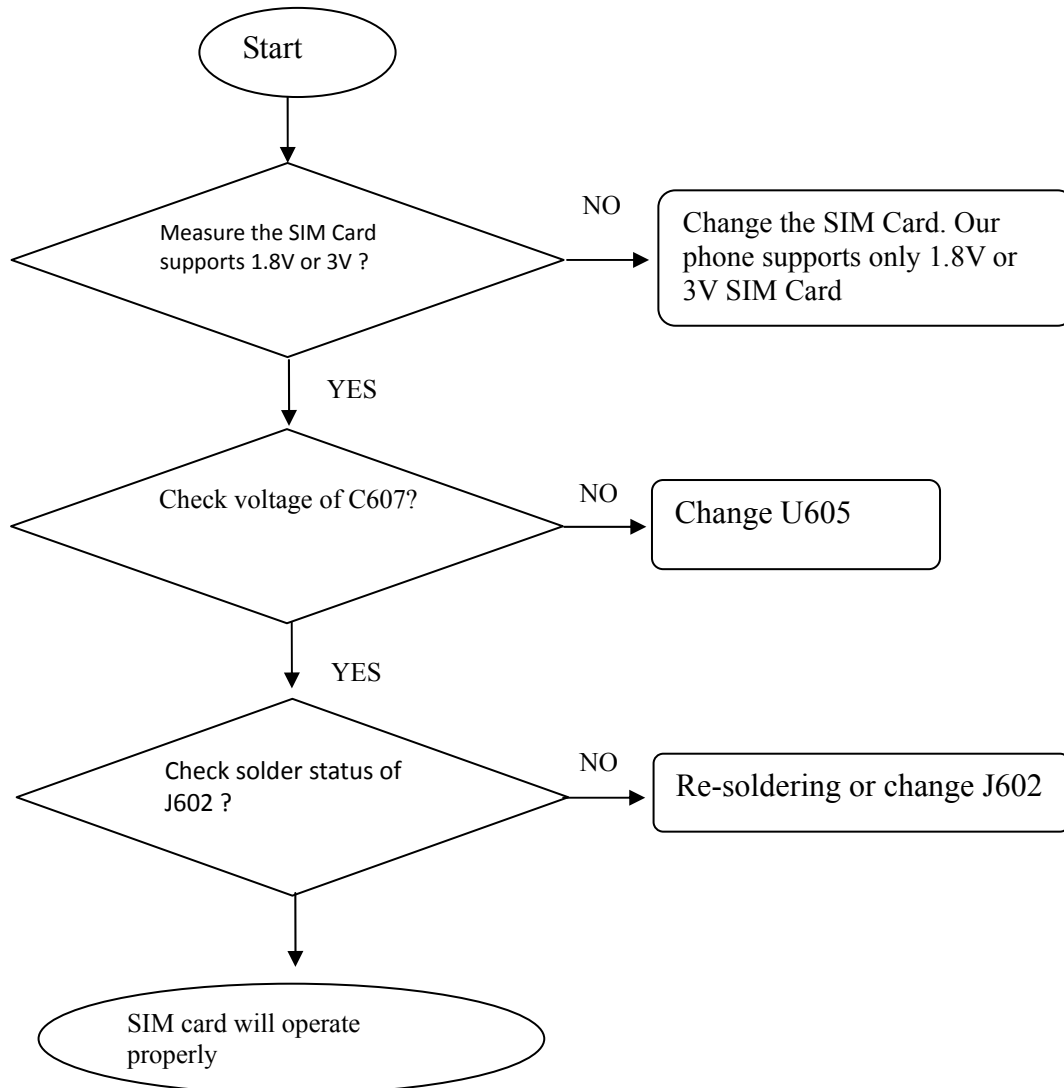
1.2.1 Test Point



1.2.2 Circuit Diagram

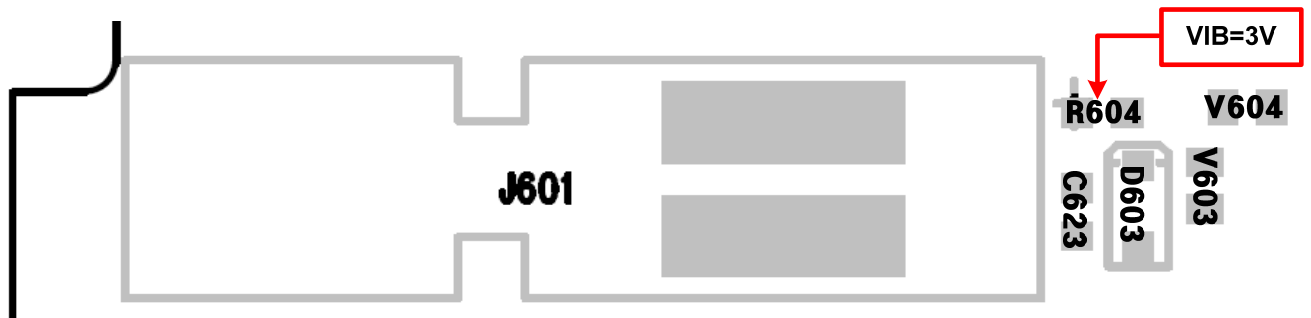


1.2.3 Checking Flow

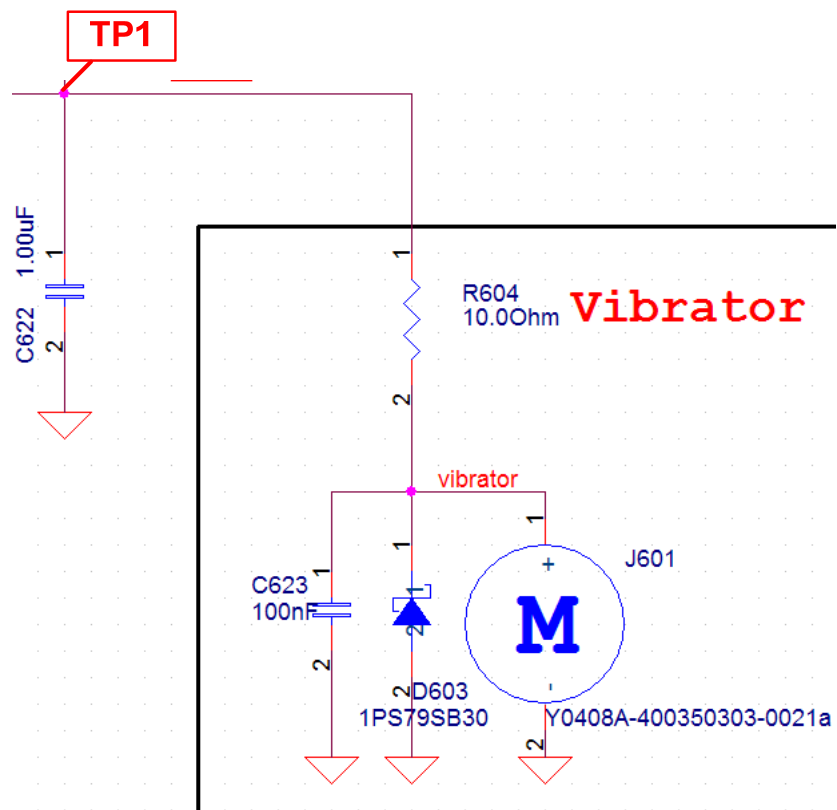


1.3 Vibrator Trouble

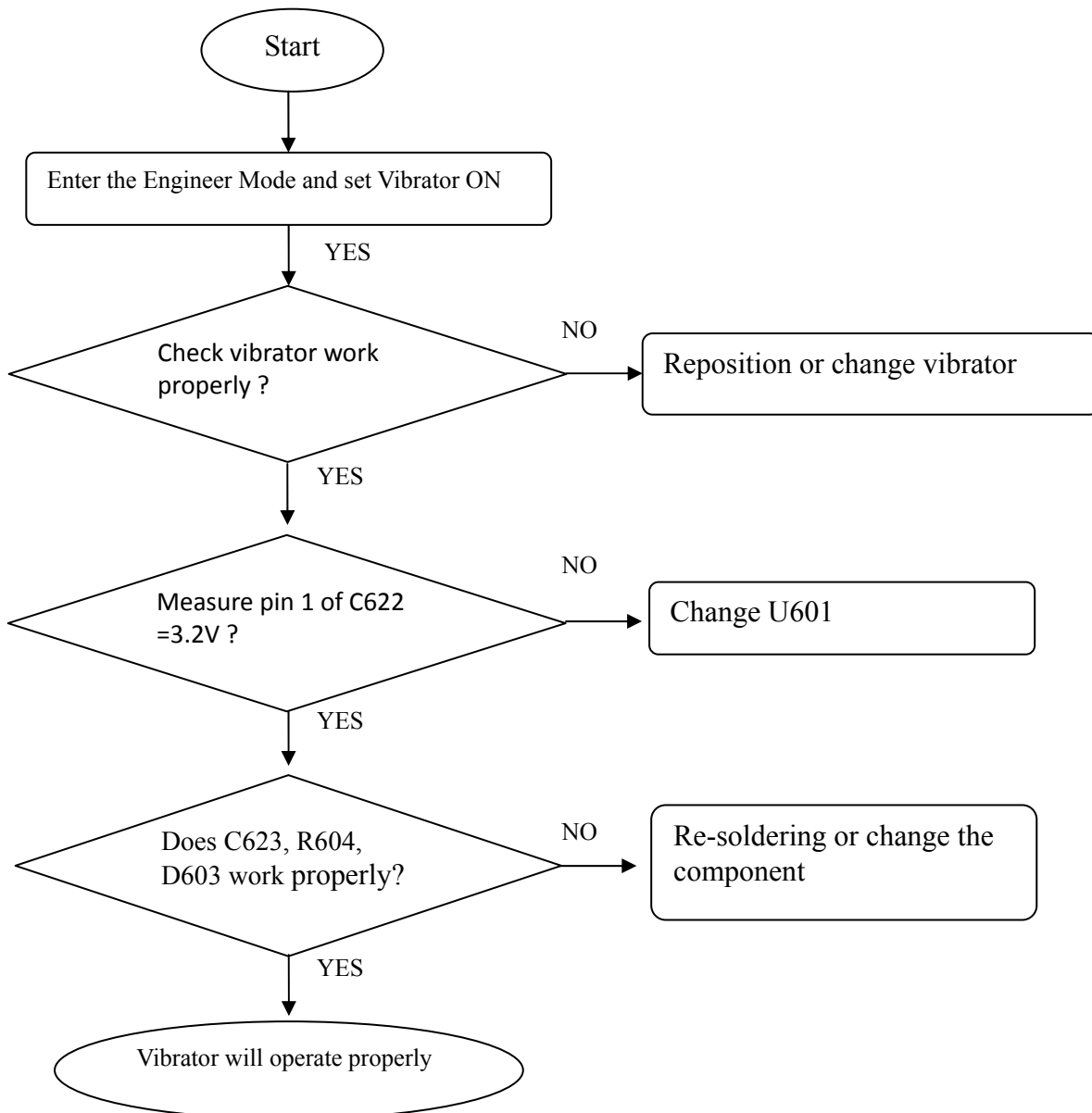
1.3.1 Test Point



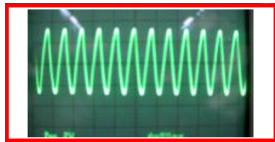
1.3.2 Circuit Diagram



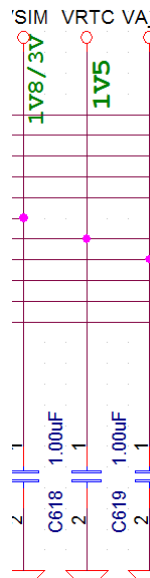
1.3.3 Checking Flow



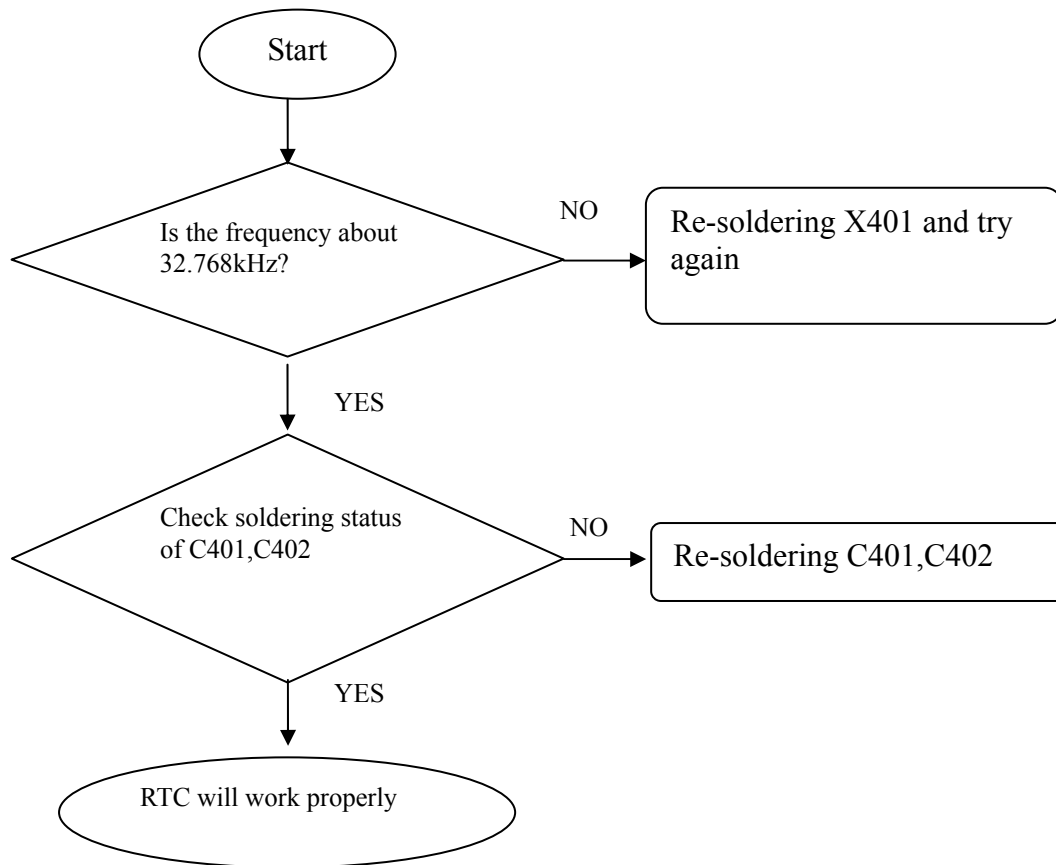
1.5.1 Test Point



1.5.2 Circuit Diagram

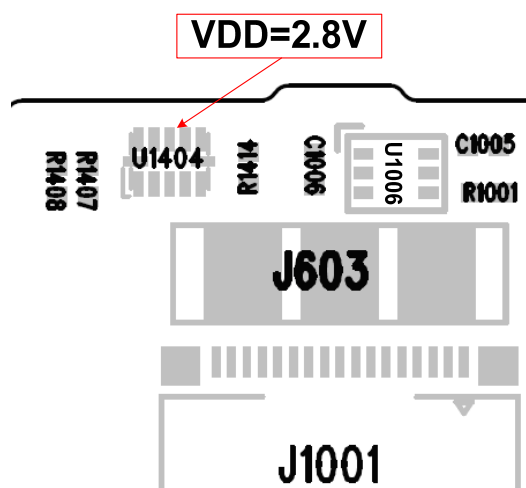


1.5.3 Checking Flow



1.6 Key Backlight Trouble

1.6.1 Test Point

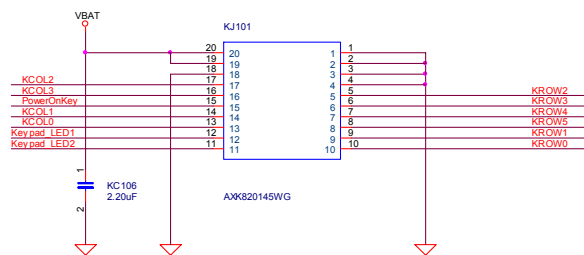


KEY PAD Connector

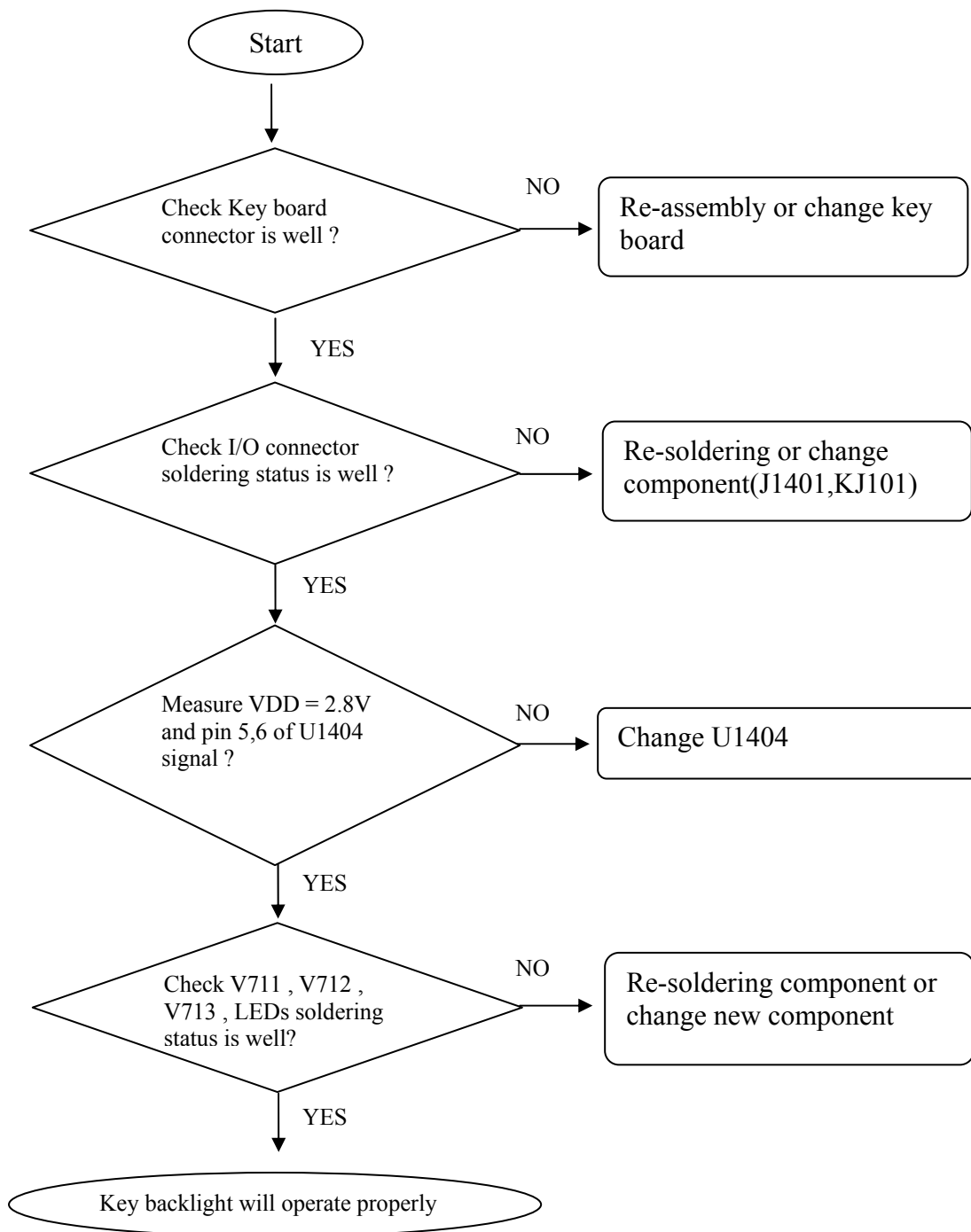
The schematic diagram illustrates the internal circuitry of the KEY PAD Connector. It features a 20-pin connector J1401 connected to several key components:

- Row Drivers:** Two N-channel MOSFETs, V1404 and V1405 (ICVE21054E250R101FR), are used to drive the rows of the keypad. V1404 is connected to KROW2, KROW3, KROW4, and KROW5. V1405 is connected to KROW0, KROW1, KCOL2, and KCOL3.
- Column Drivers:** The same MOSFETs (V1404 and V1405) are also used to drive the columns of the keypad.
- LED Control:** A TCA6507RUER (U1404) is used to control the LEDs. It has 12 pins (P0-P6) connected to the LEDs. The LEDs are labeled Keypad_LED1 and Keypad_LED2.
- Power Switch:** A power switch V1413 (MLVS0402M07-330) is connected to the PowerOnKey pin of J1401. It is also connected to a capacitor C1401 (1.00uF) and a diode V1413.
- Resistors:** Several resistors are used for current limiting and pull-up/pull-down. R1407 and R1408 are 1.00Kohm resistors. R1413, R1412, R1411, R1410, and R1409 are 68.0Ohm resistors. R1414 is a 100Kohm resistor.
- Capacitor:** A capacitor C1401 (1.00uF) is connected to the PowerOnKey pin.
- Diode:** A diode V1413 (MLVS0402M07-330) is connected to the PowerOnKey pin.

The diagram is labeled with 'KEY PAD Connector' and 'TP1'.

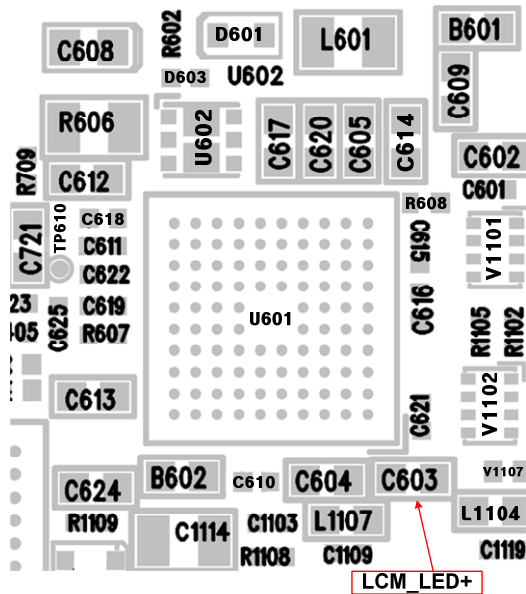


1.6.3 Checking Flow

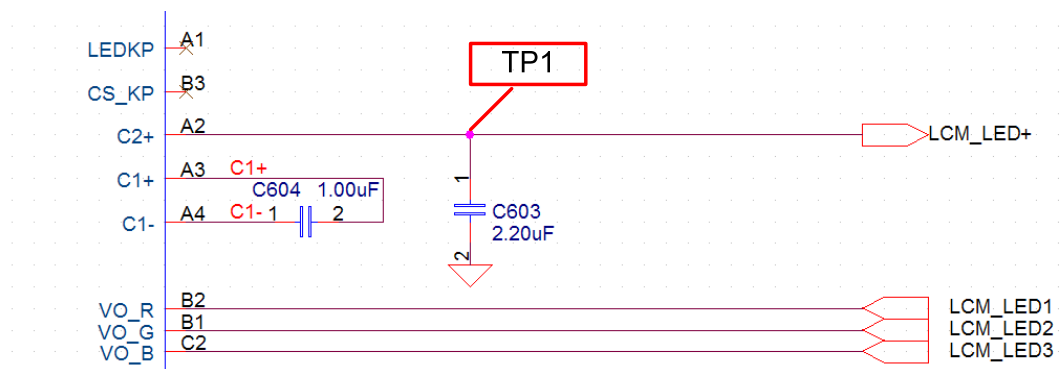


1.7 LCM Backlight Trouble

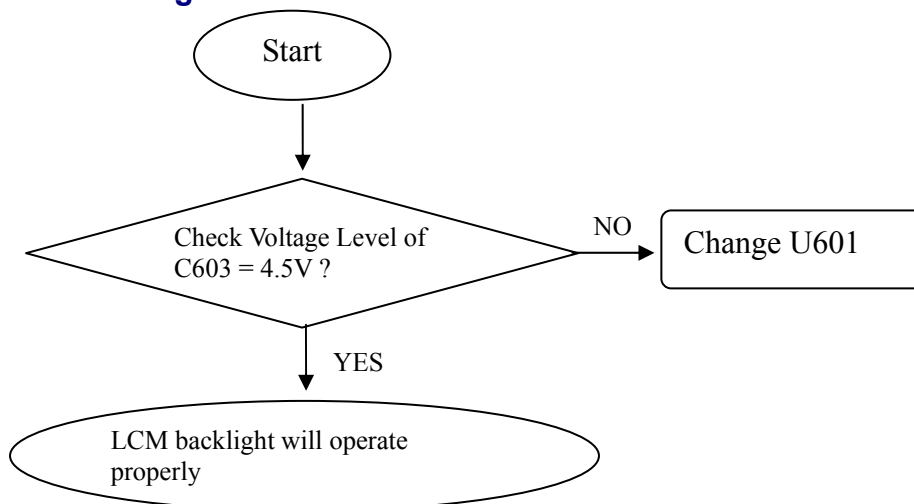
1.7.1 Test Point



1.7.2 Circuit Diagram

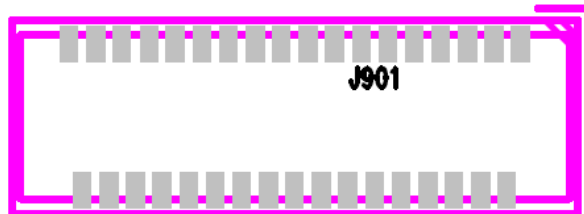


1.7.3 Checking Flow

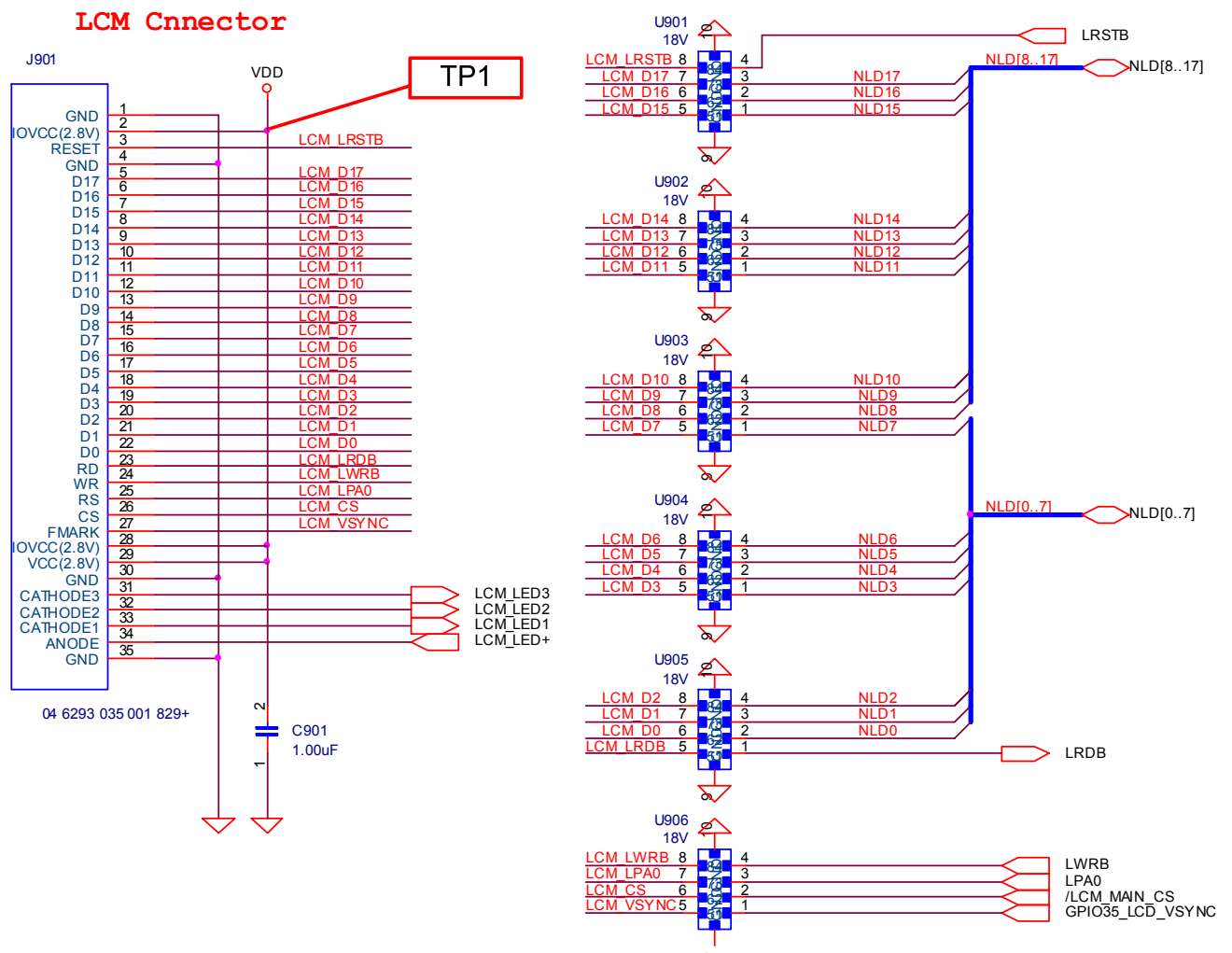


1.8 LCM Trouble

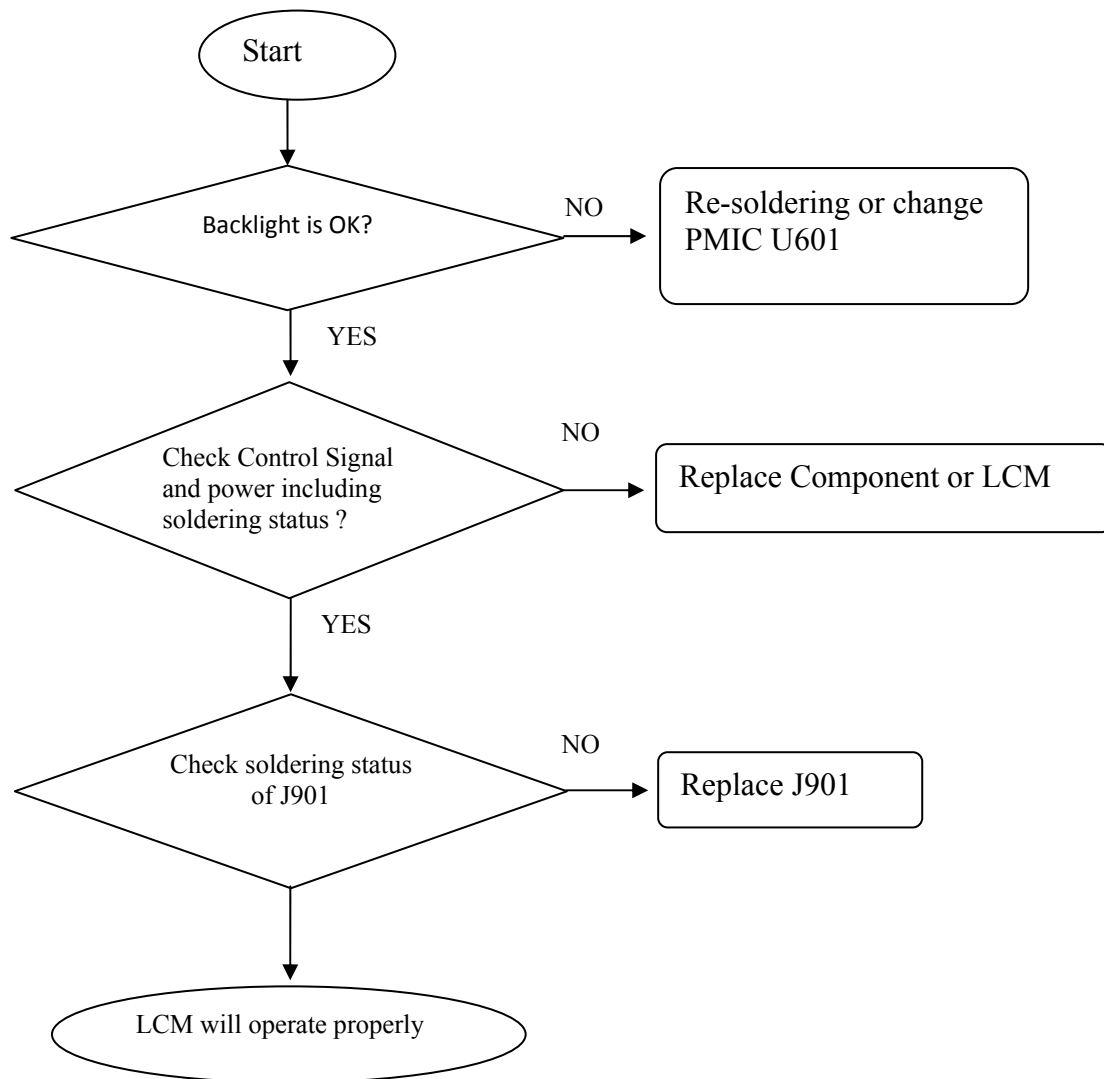
1.8.1 Test Point



1.8.2 Circuit Diagram

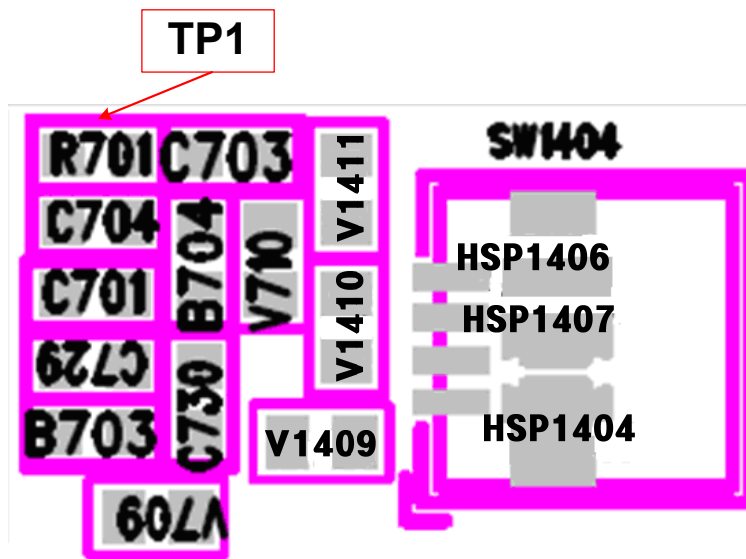


1.8.3 Checking Flow

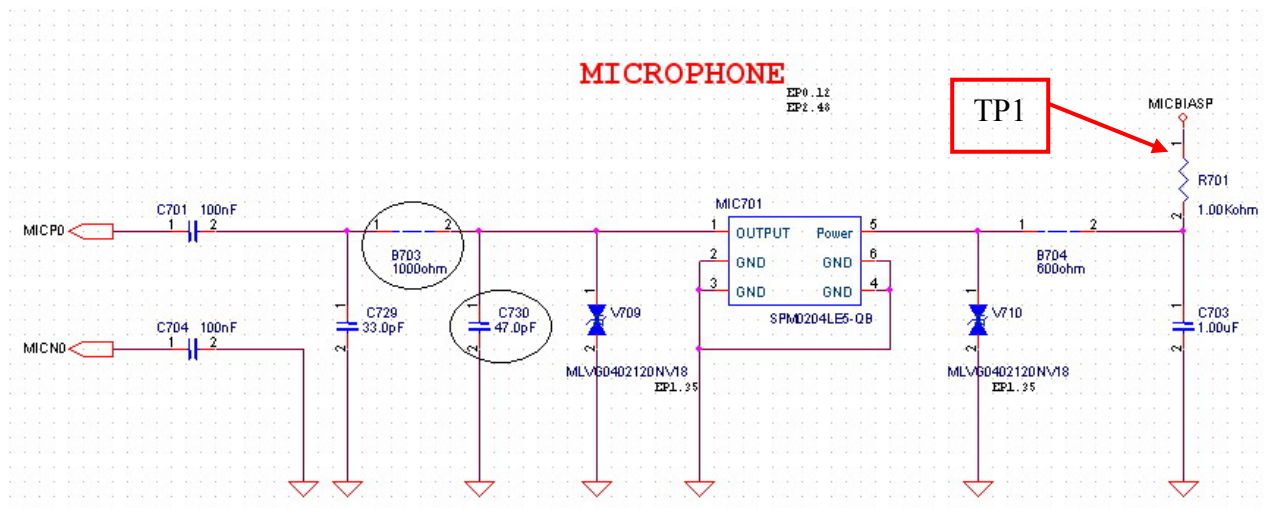


1.9 Microphone Trouble

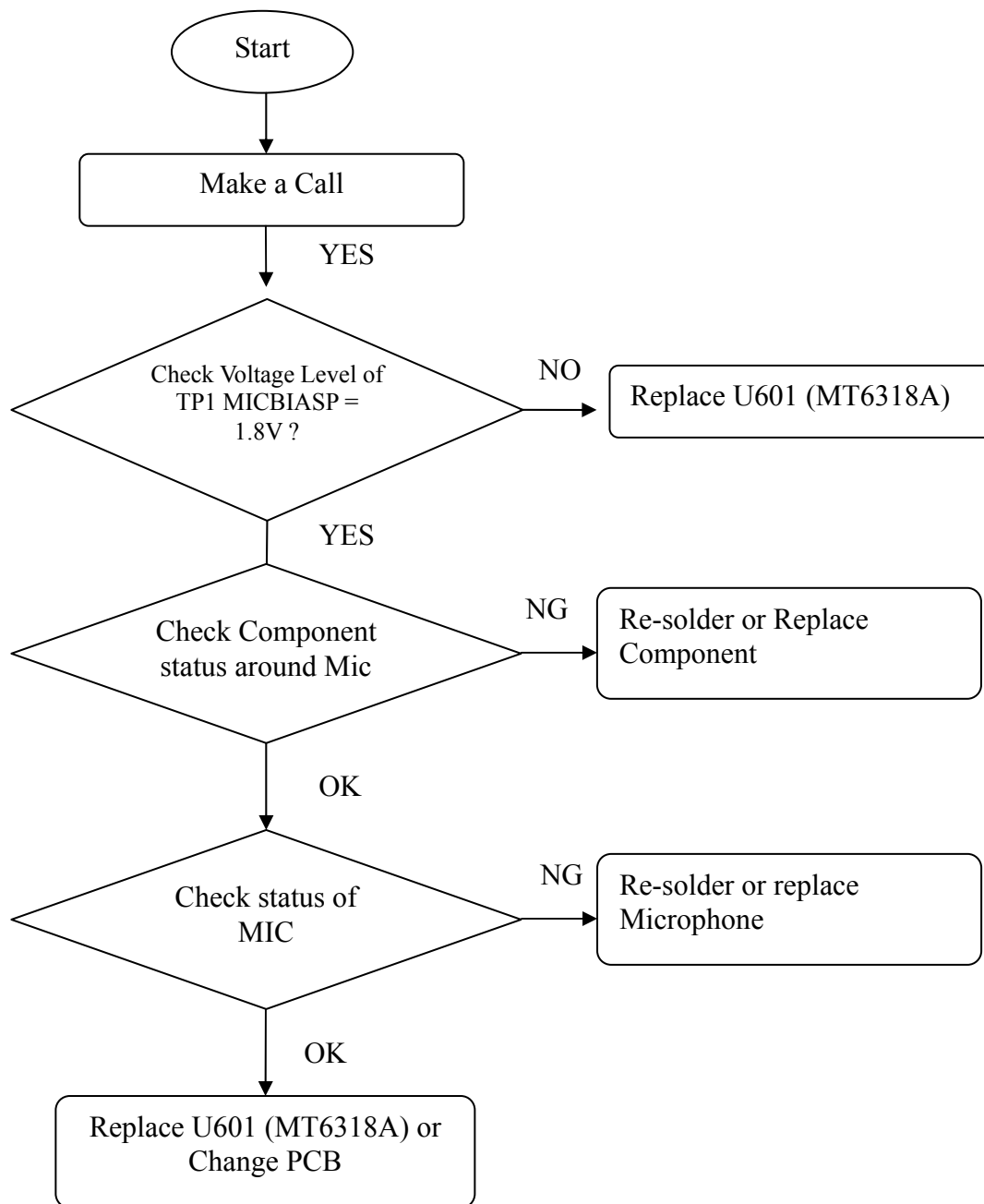
1.9.1 Test Point



1.9.2 Circuit Diagram

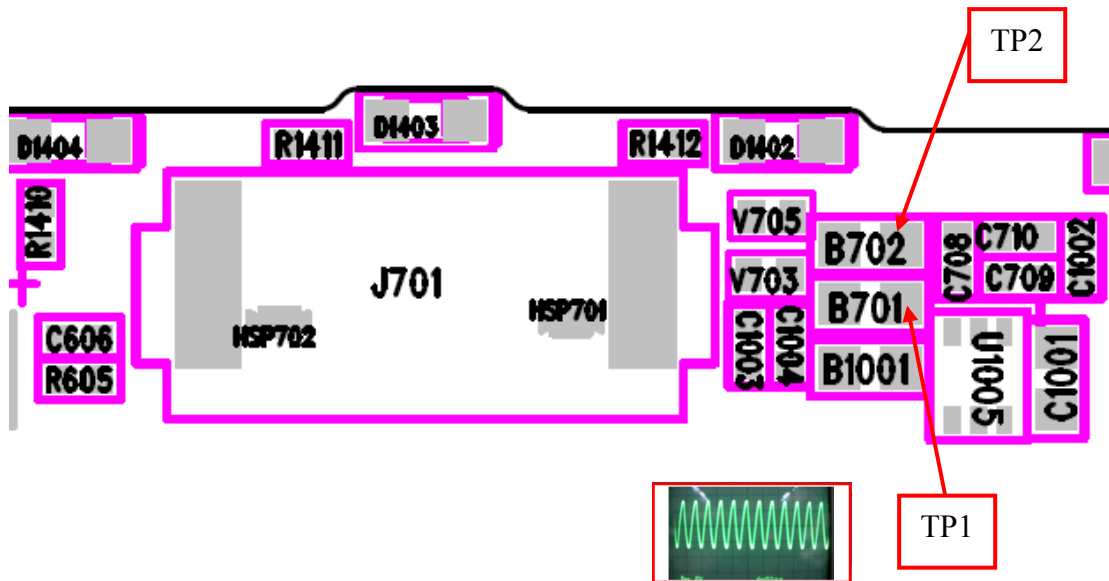


1.9.3 Checking Flow

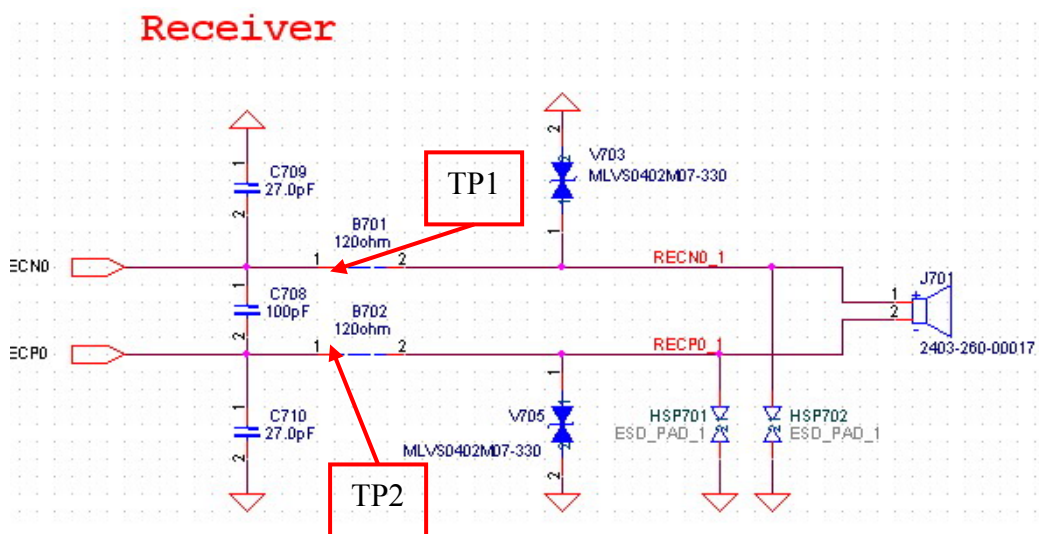


1.10 Receiver Trouble

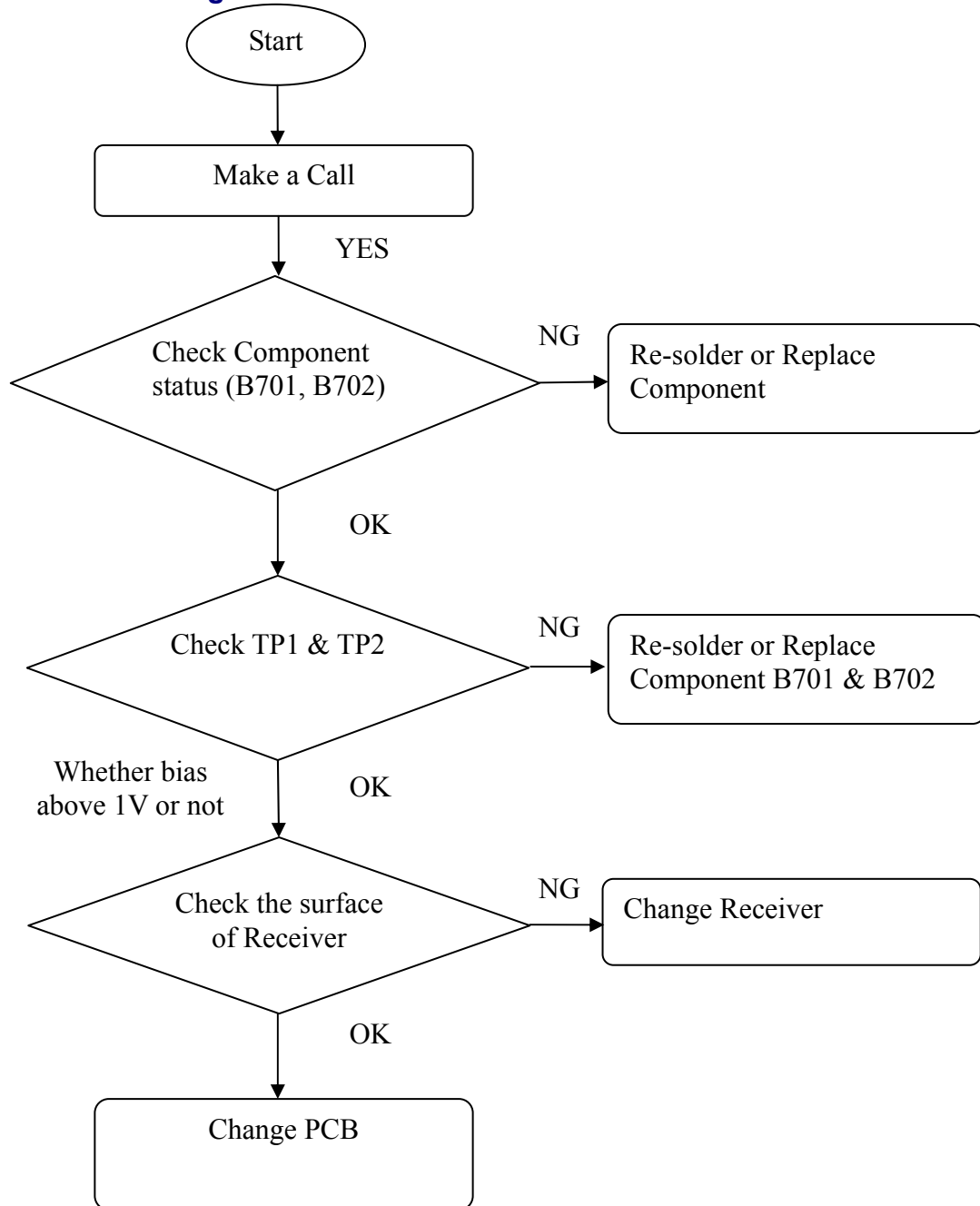
1.10.1 Test Point



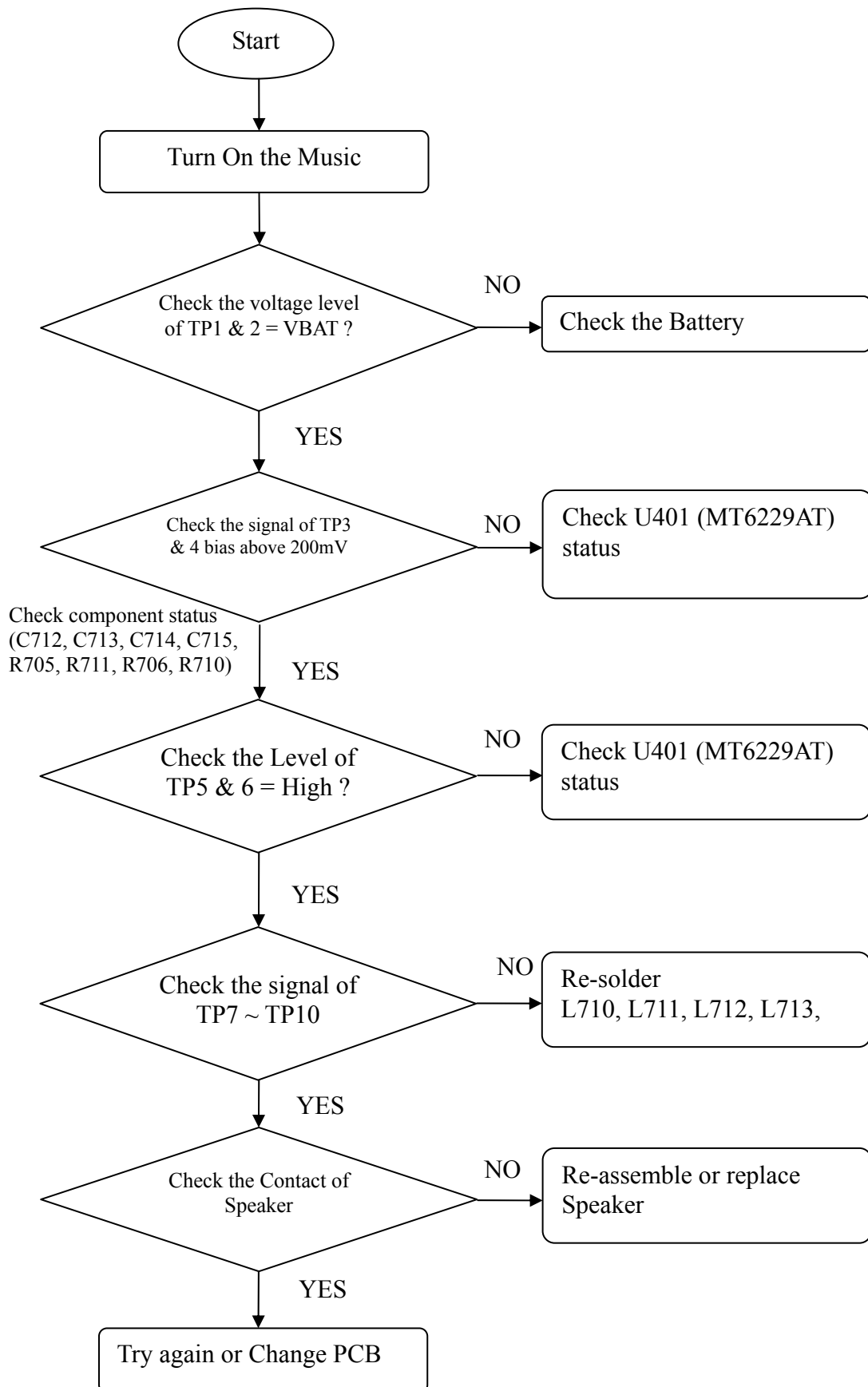
1.10.2 Circuit Diagram



1.10.3 Checking Flow



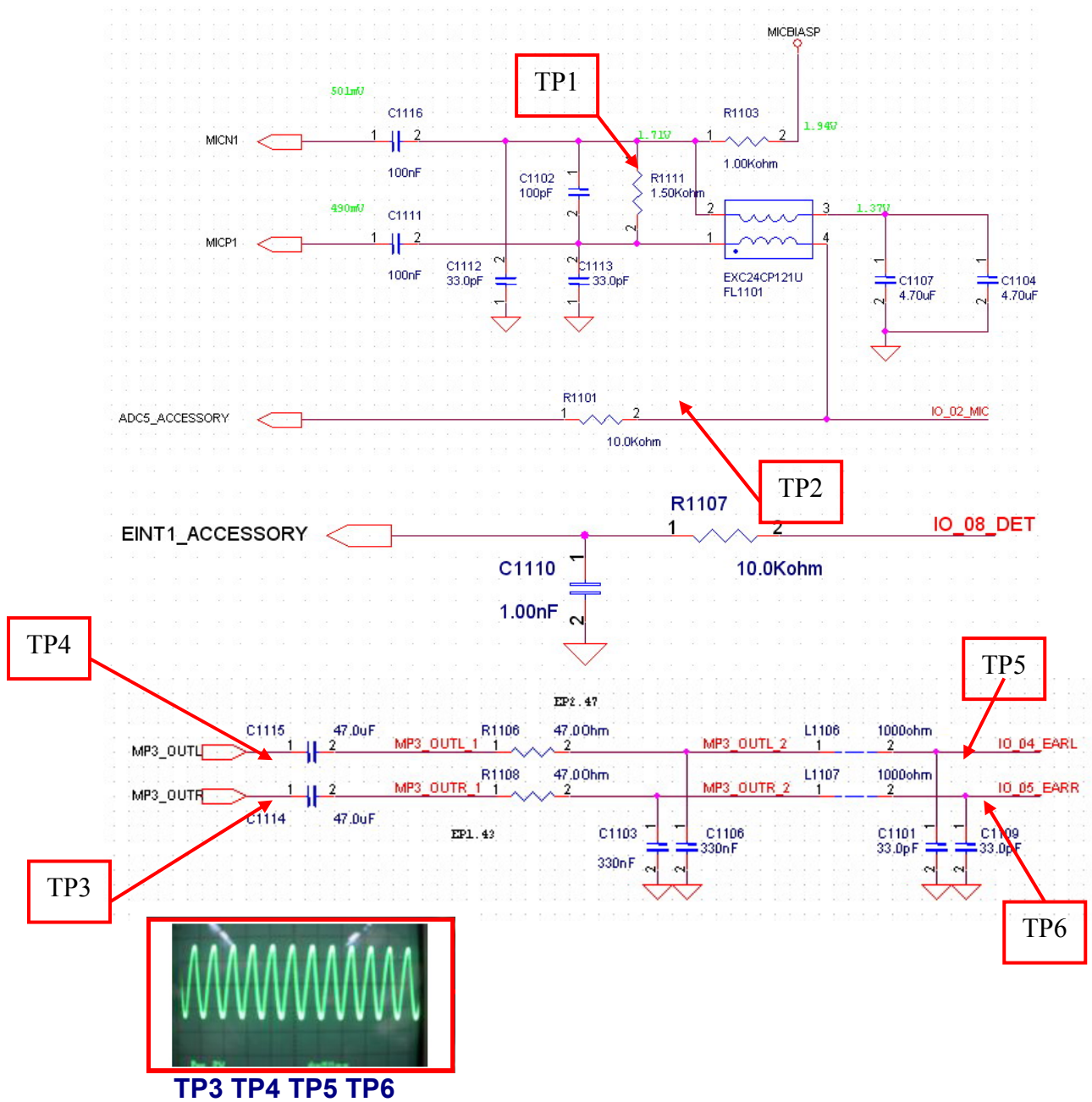
1.11.3 Checking Flow



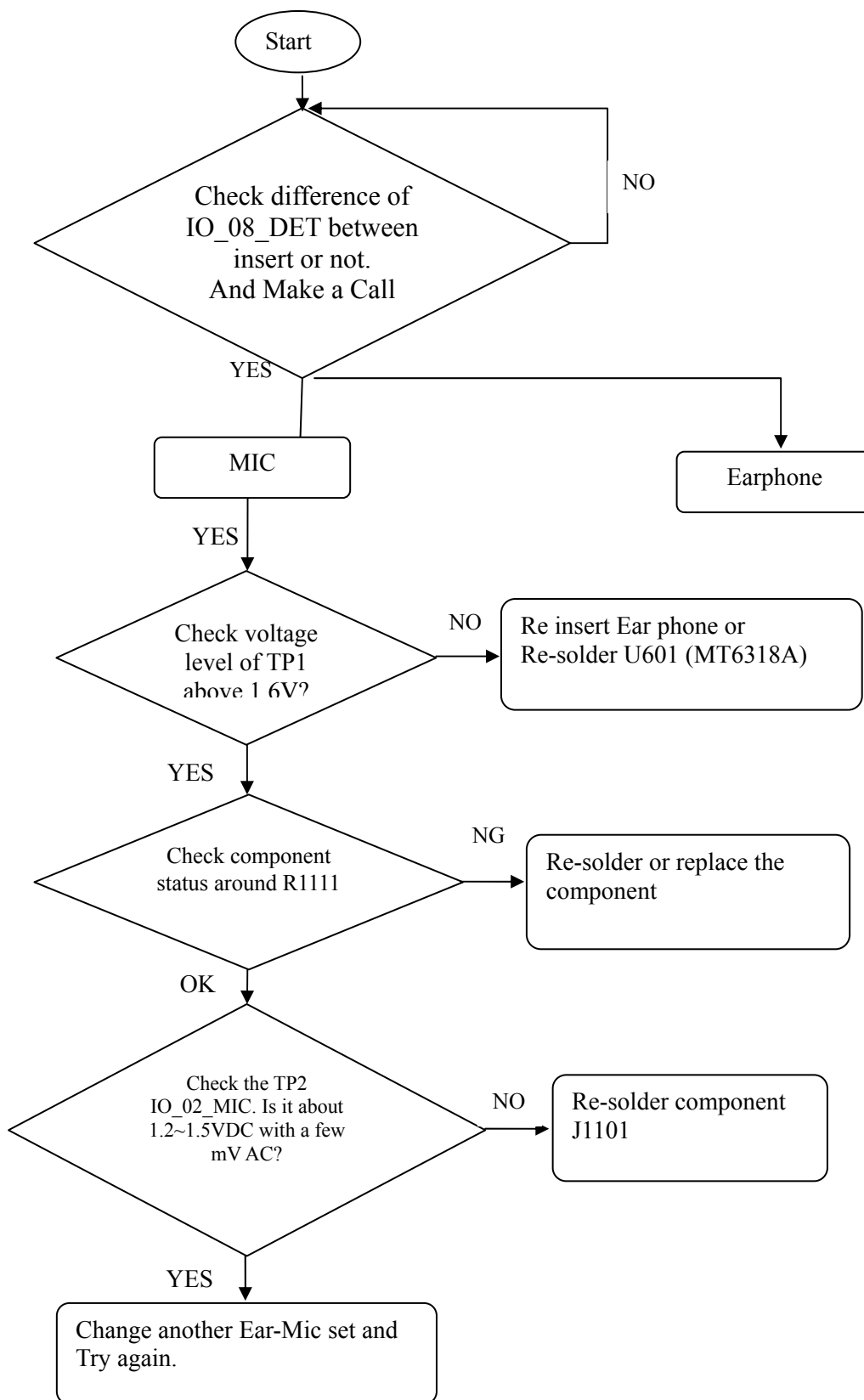
1.12.1 Test Point

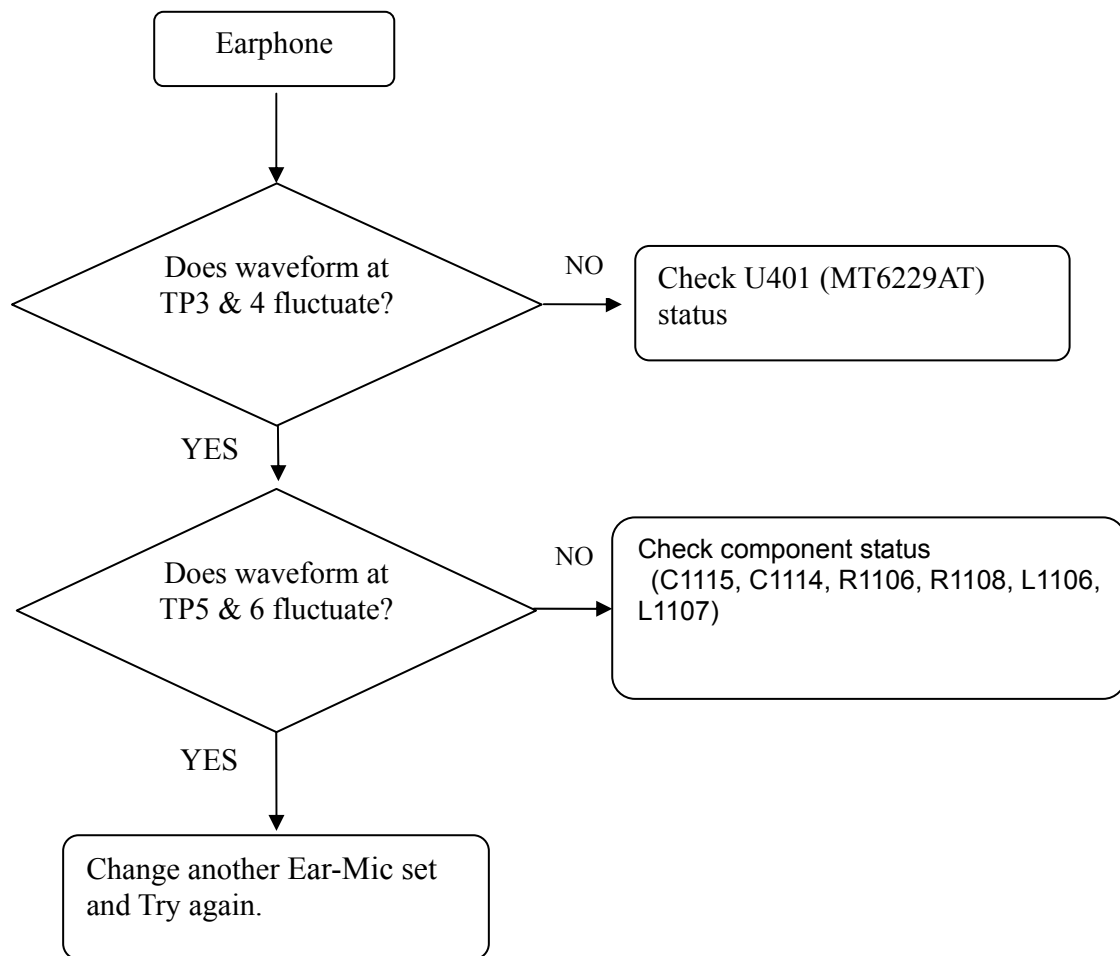


1.12.2 Circuit Diagram



1.12.3 Checking Flow

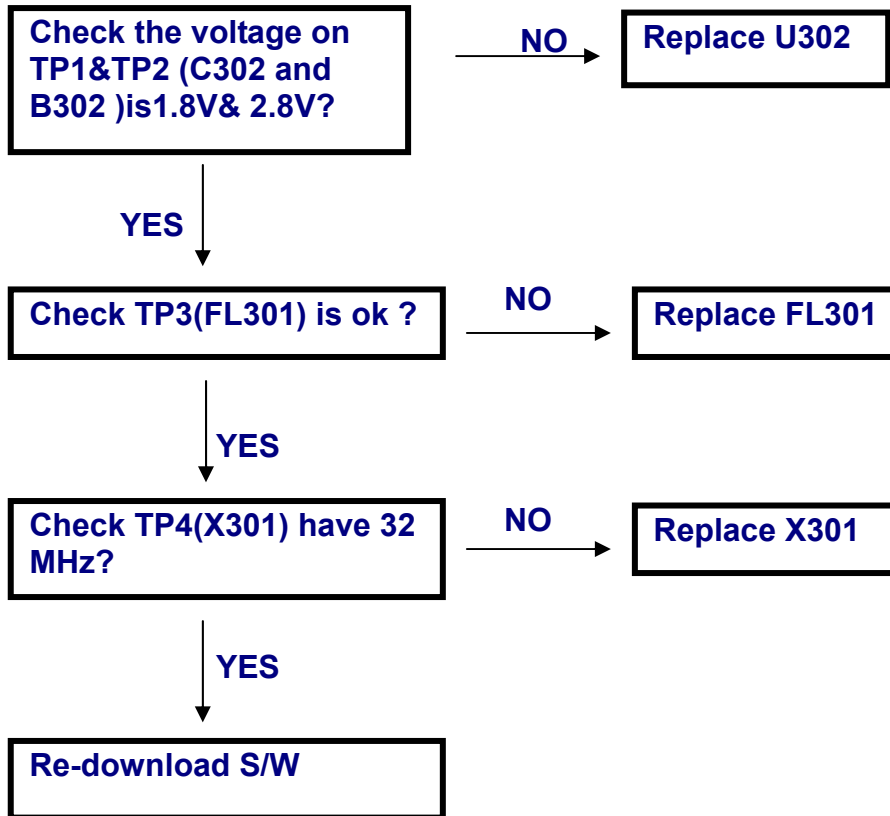




Test Point

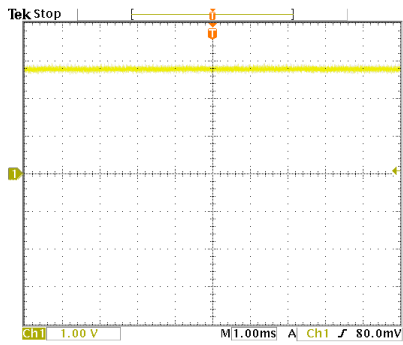


Checking Flow

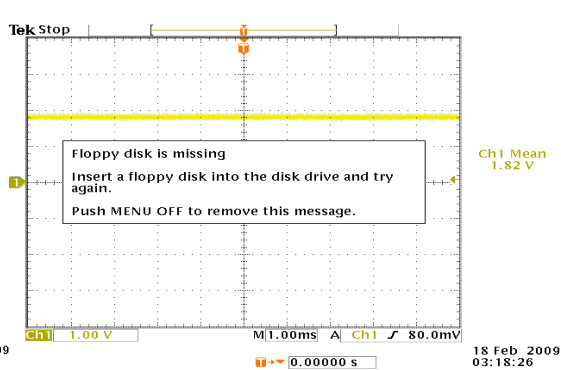


Waveform

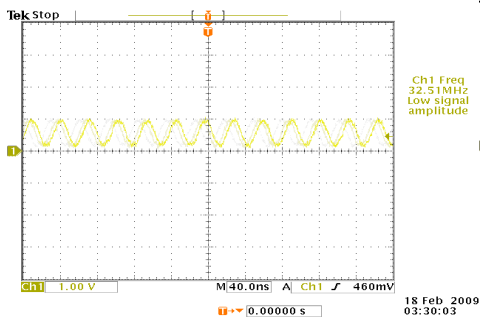
C312 & B302: $2.8 \pm 0.2V$



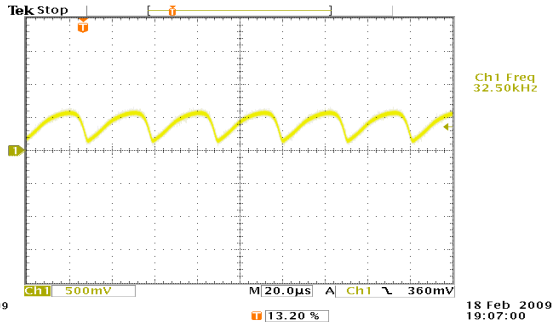
C301 & C302: $1.8 \pm 0.2V$



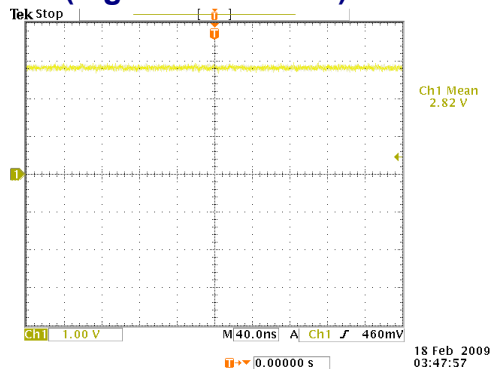
C306 or C309: 32MHz



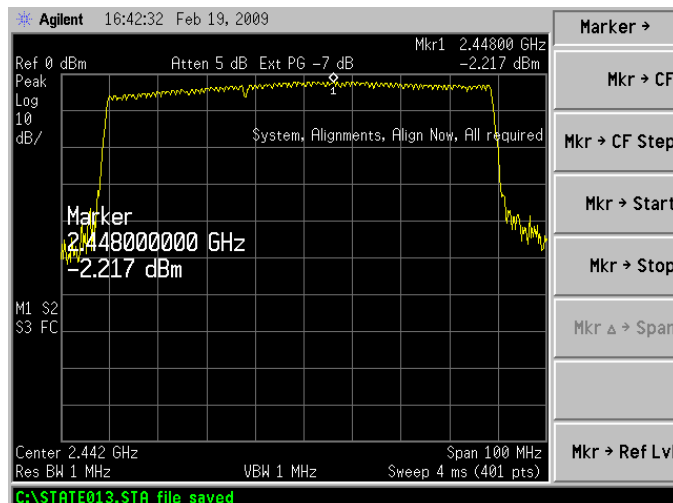
C307: 32kHz



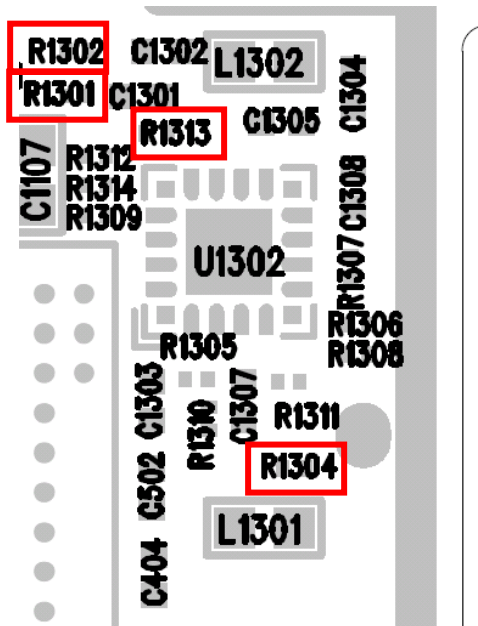
R301: $2.8 \pm 0.2V$ (high enable reset)



**FL301: $1 \pm 5dBm$ (need to offset cableloss)
2402~2480 MHz(frequency hopping)**

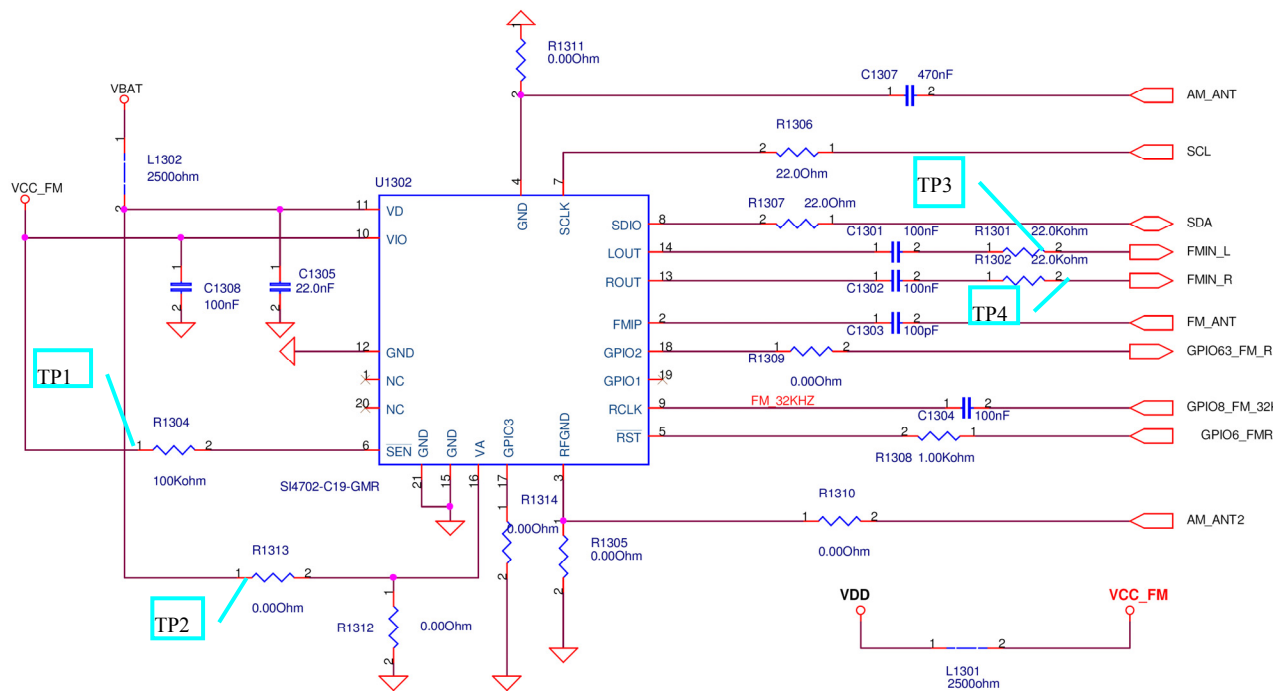


Test Point

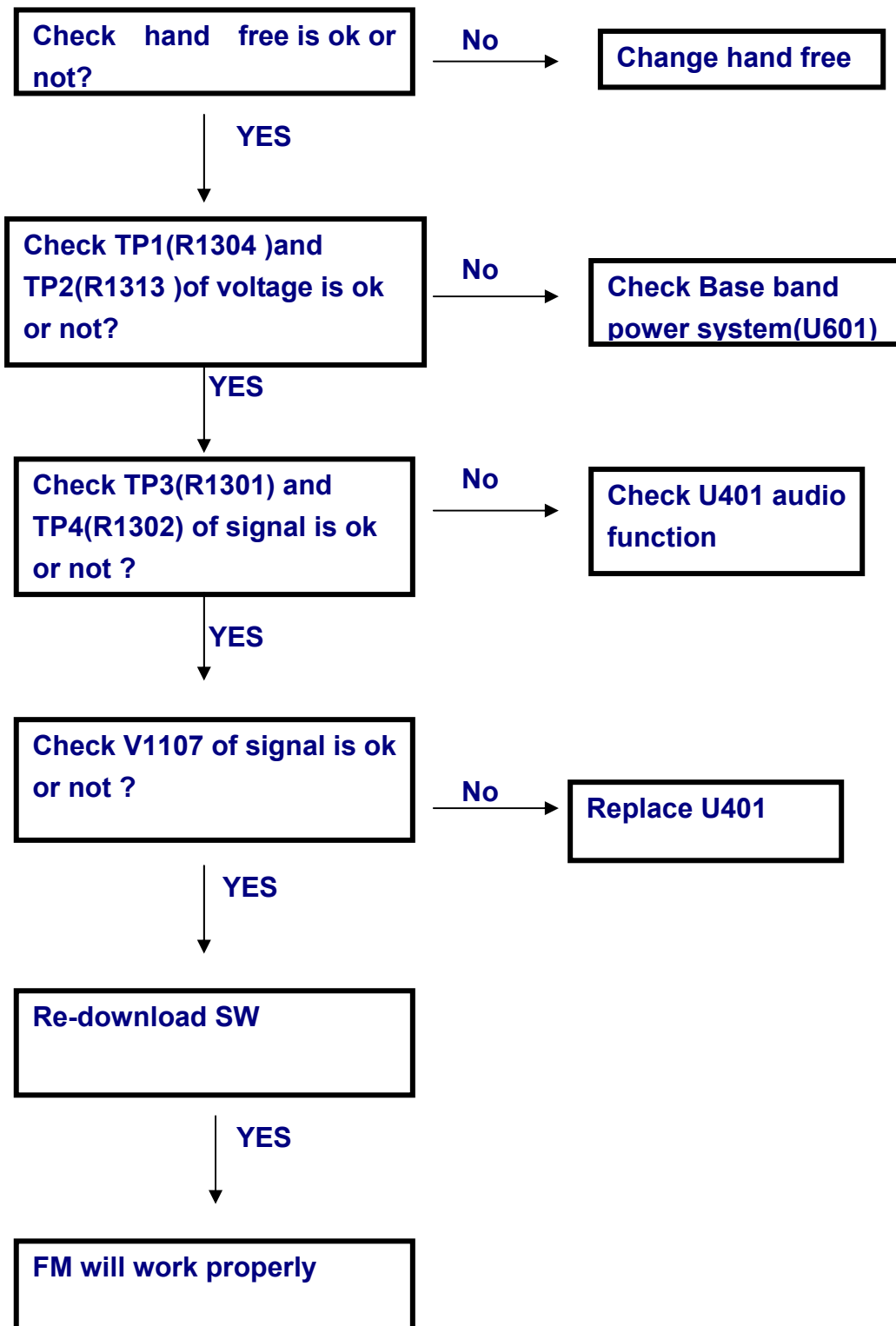


Circuit Diagram

FM Radio

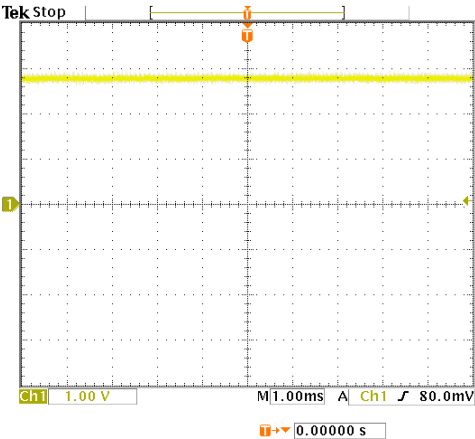


Checking Flow

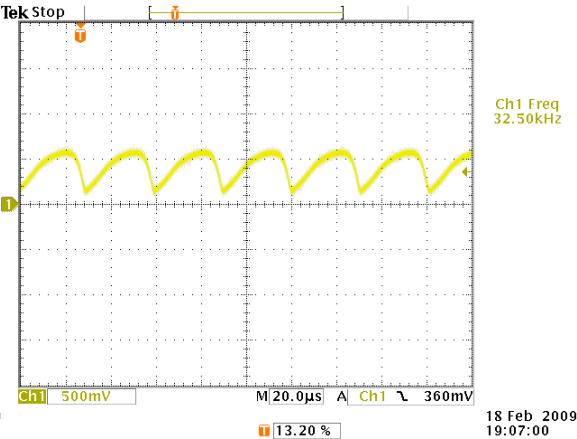


Waveform

R1304: 2.8±0.2V

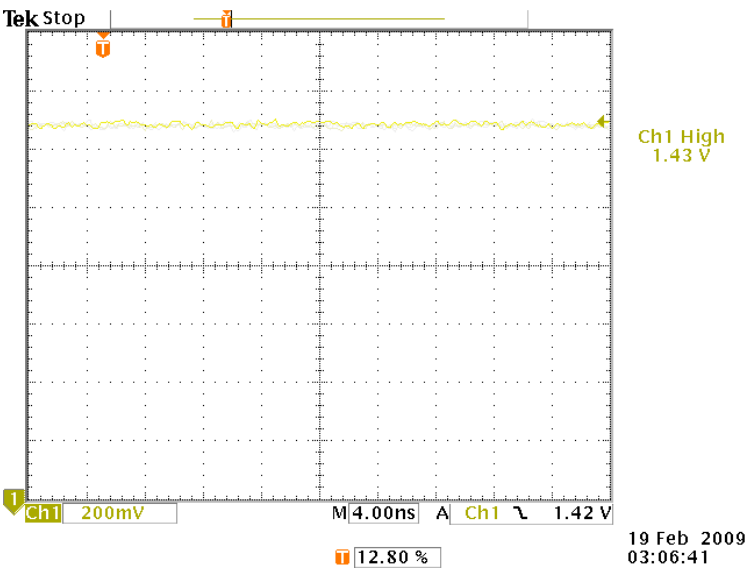


C1304: 32kHz



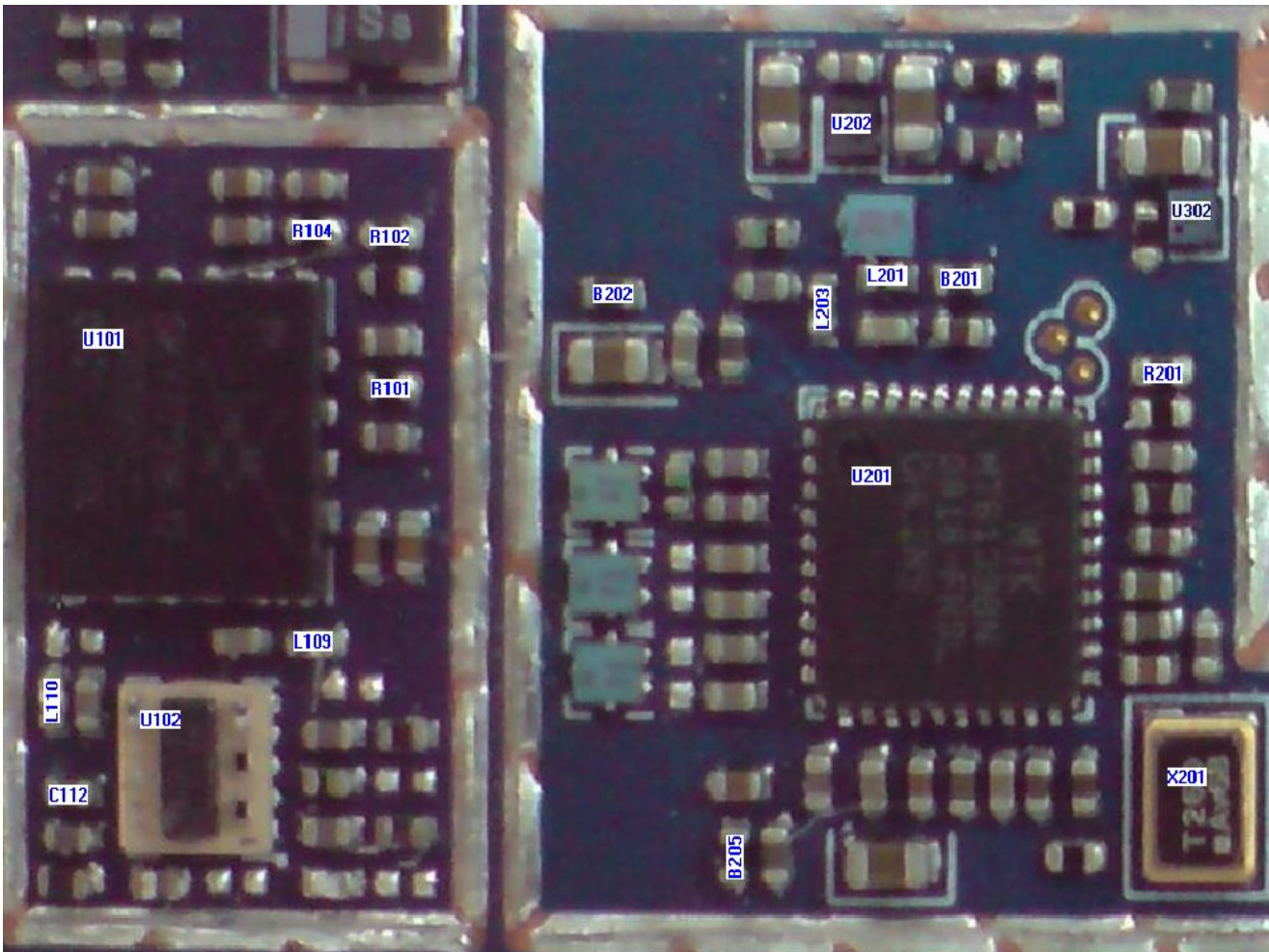
R1313: 3.8±0.5V(VBAT=power supply voltage)

R1301 & R1302: 1.4±0.2V(analog sound)

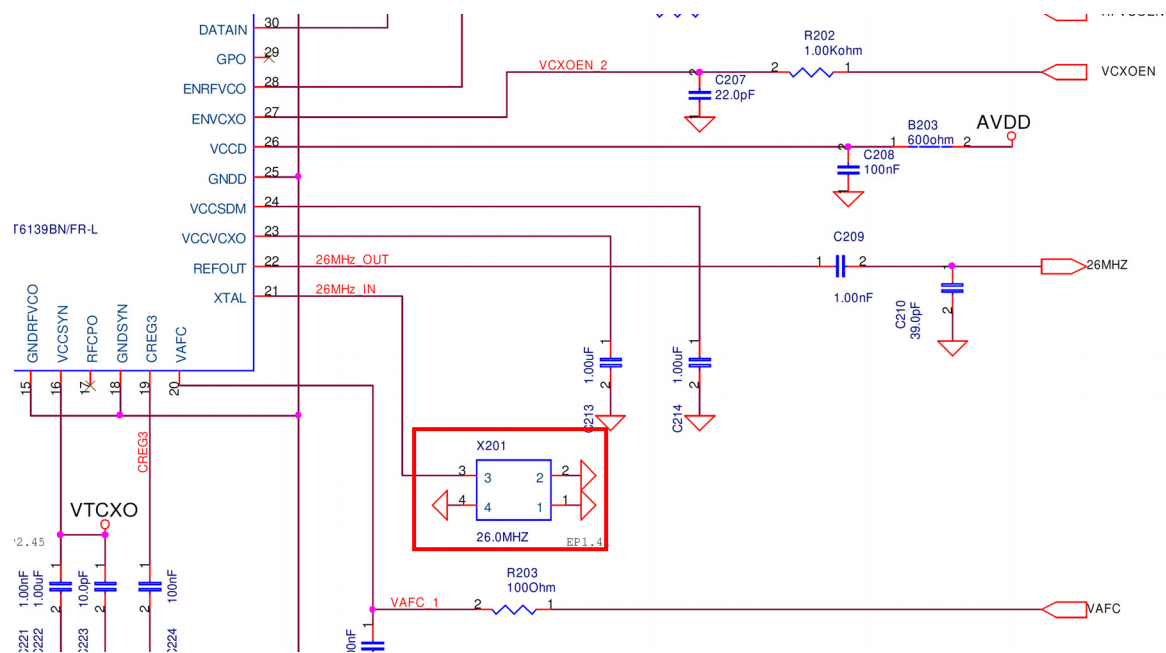
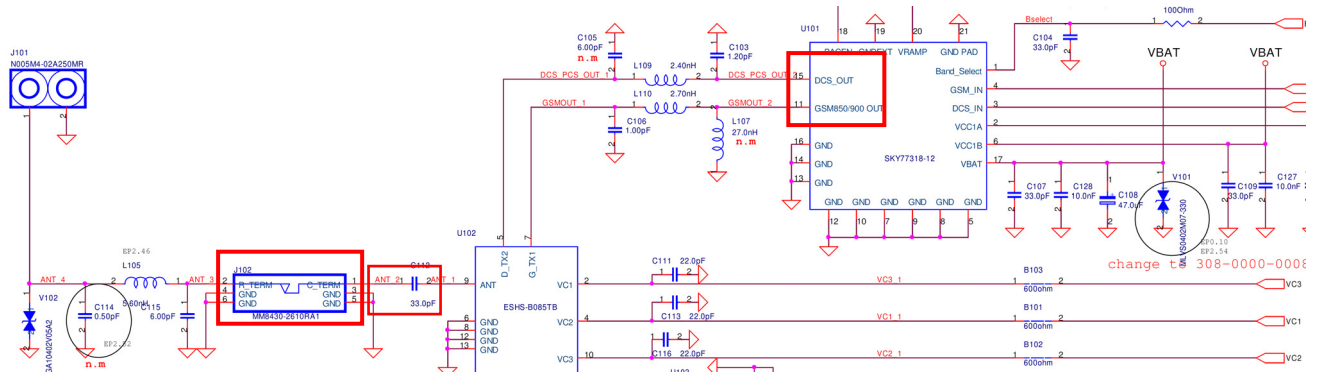


RF Transceiver (MT6139)

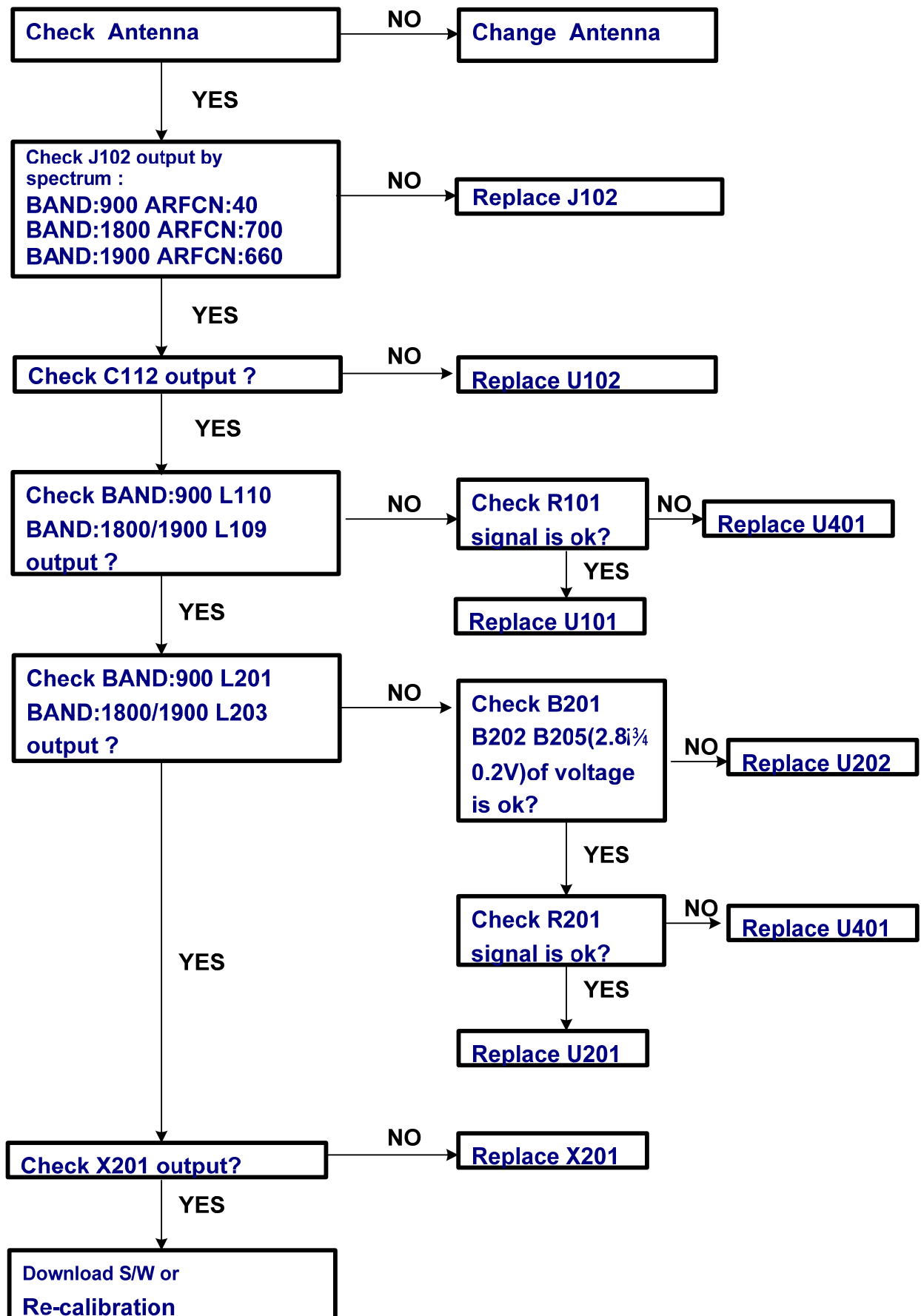
Test Point



Circuit Diagram

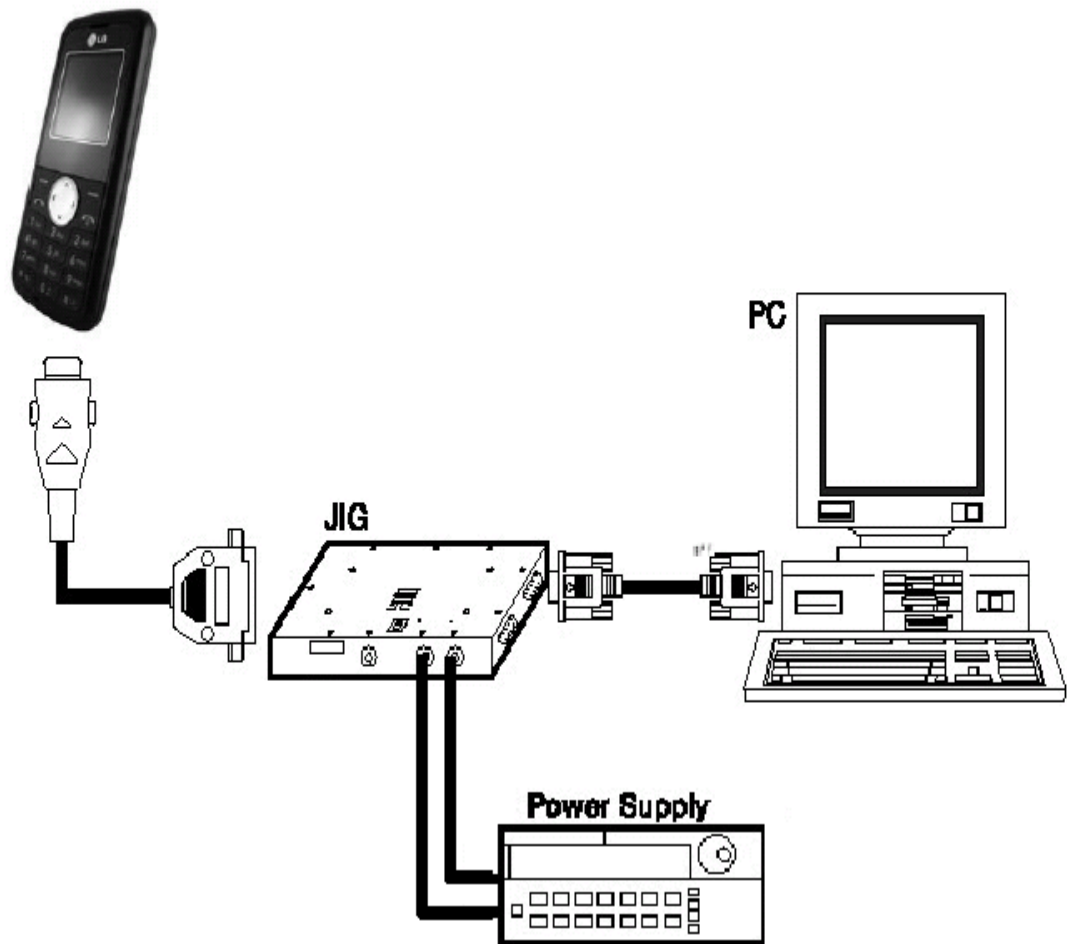


Checking Flow



5.DOWNLOAD

5.1 Download setup



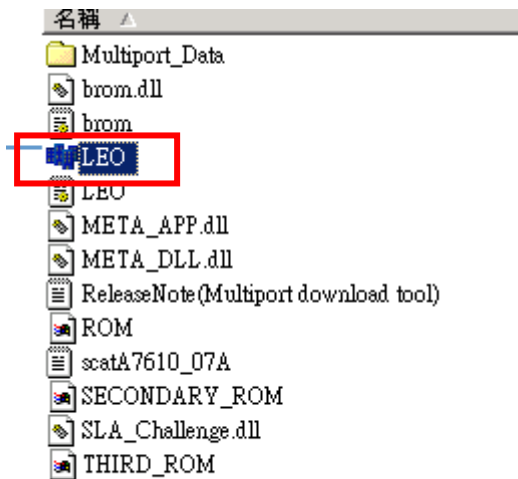
5.2 LEO Download Tool

Tools

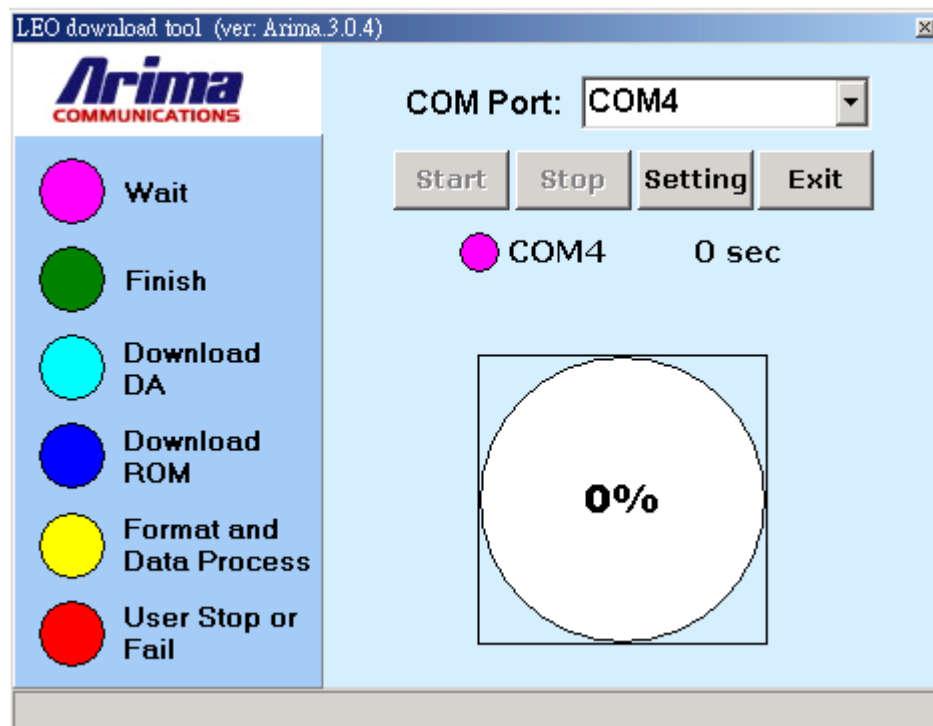
1. Download cable
2. PC
3. Battery (3.8 V Li-ion Battery)

How to user Leo download tool

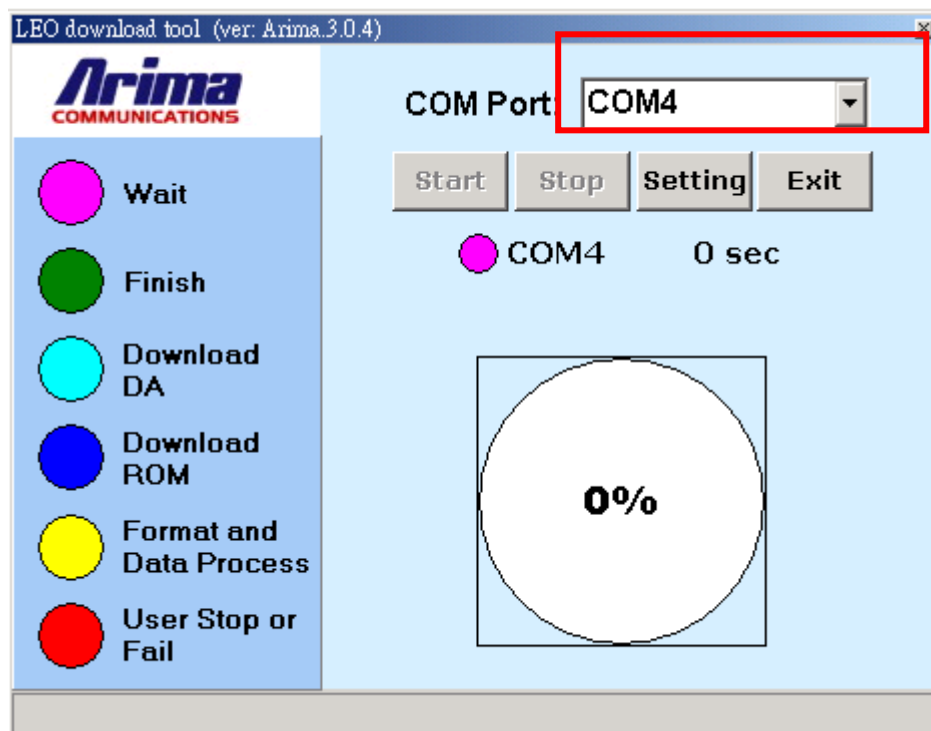
1. Connect Download cable with computer, and then double click the LEO.



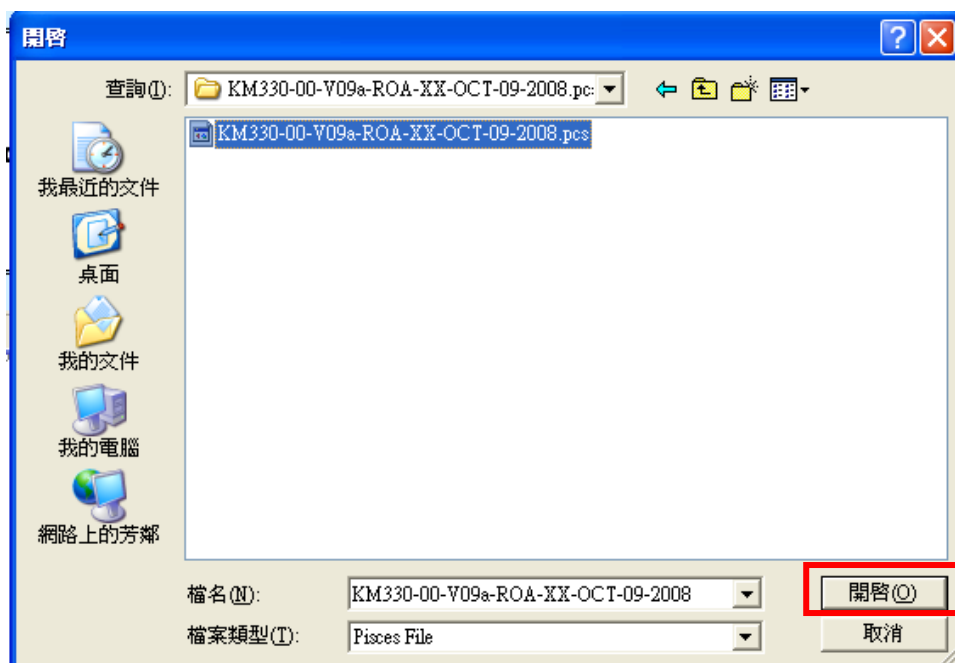
2. you can see the below picture.



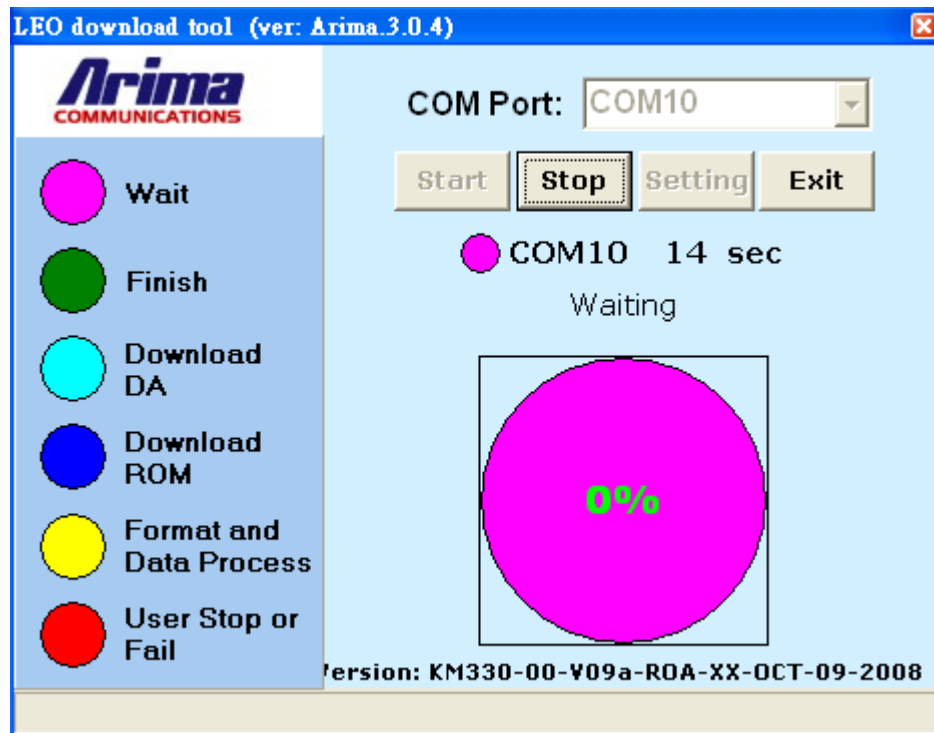
3. Select COM port (LEO will auto detect COM port)



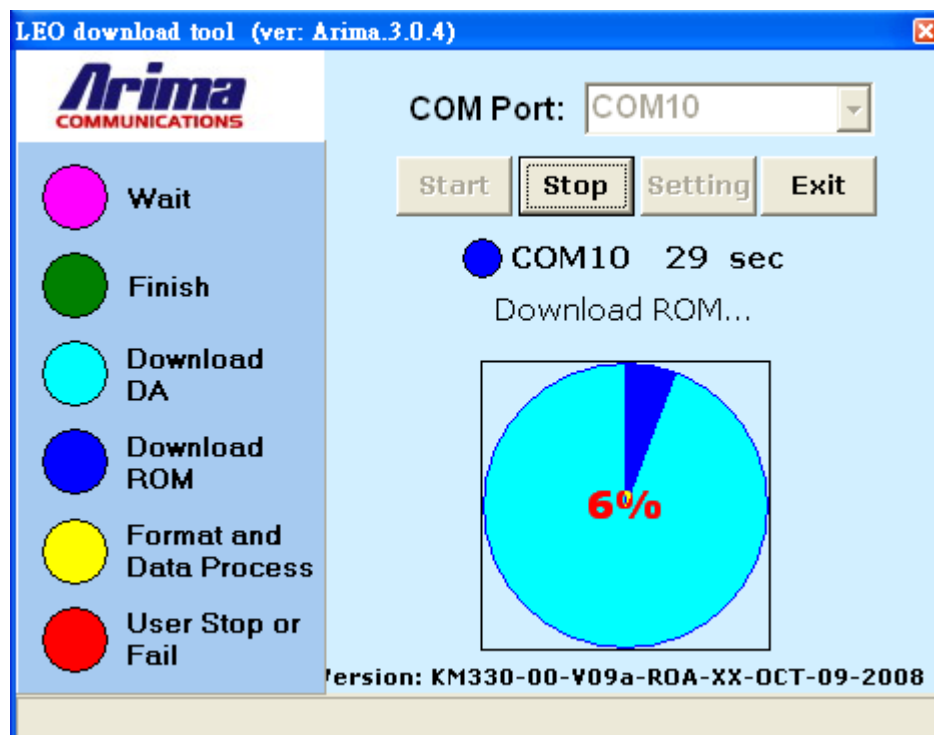
4. Click the Setting button and select a valid file. The file always end “.PCS” , reference below picture.



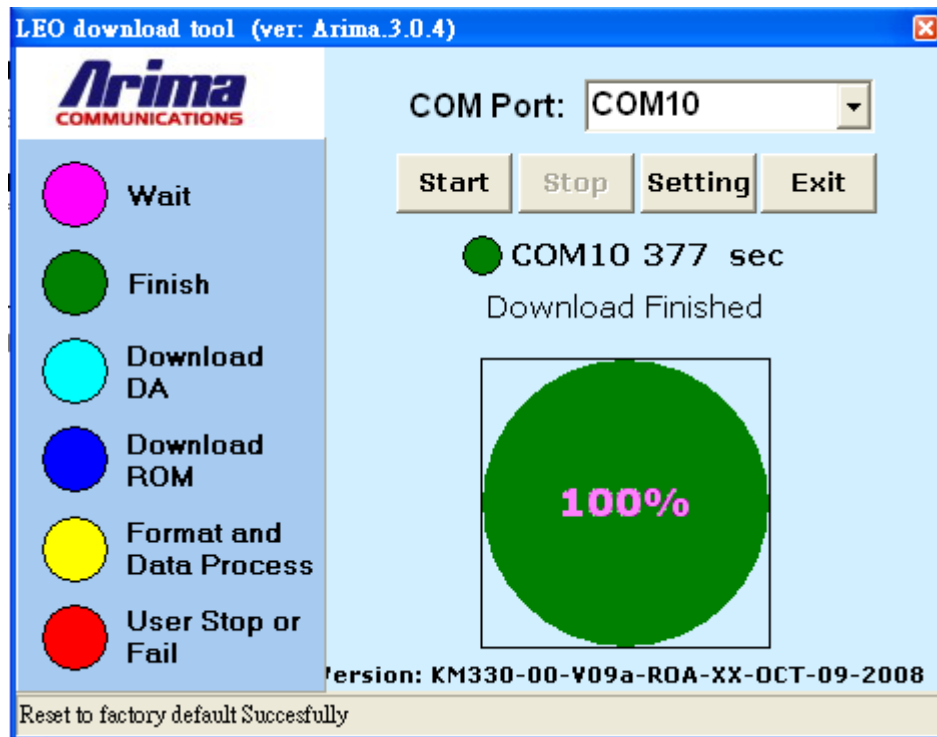
5. Select the “. PCS “file and press open, you can see following picture.



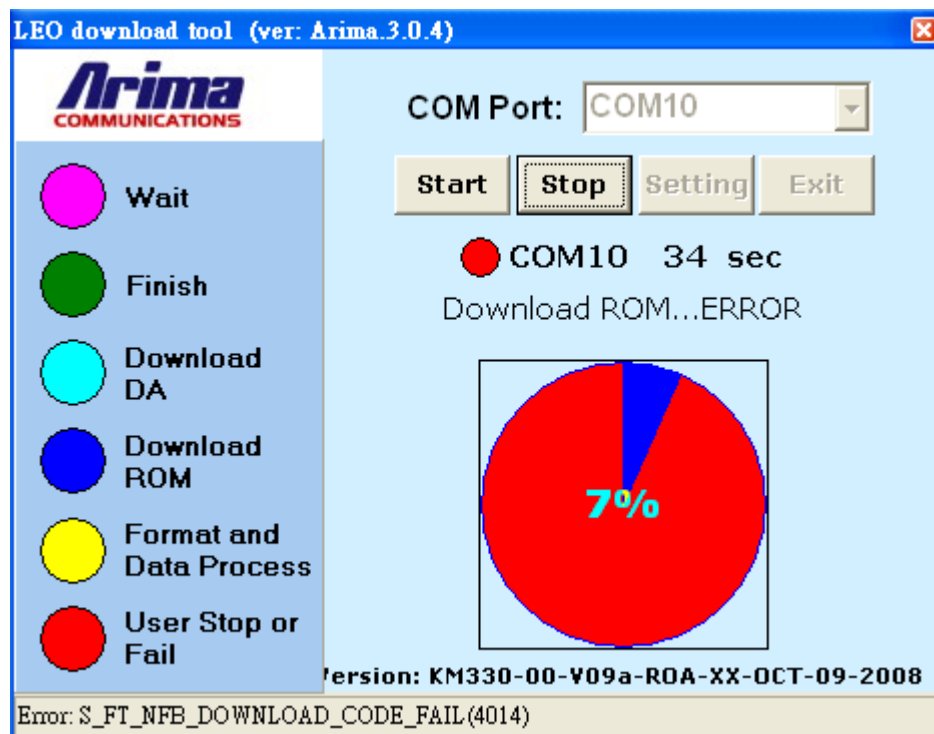
6. After you see the pink cycle, connect download cable with handset, and then press the power key , you will see below picture.



7. After reach to 100%, SW download finish.

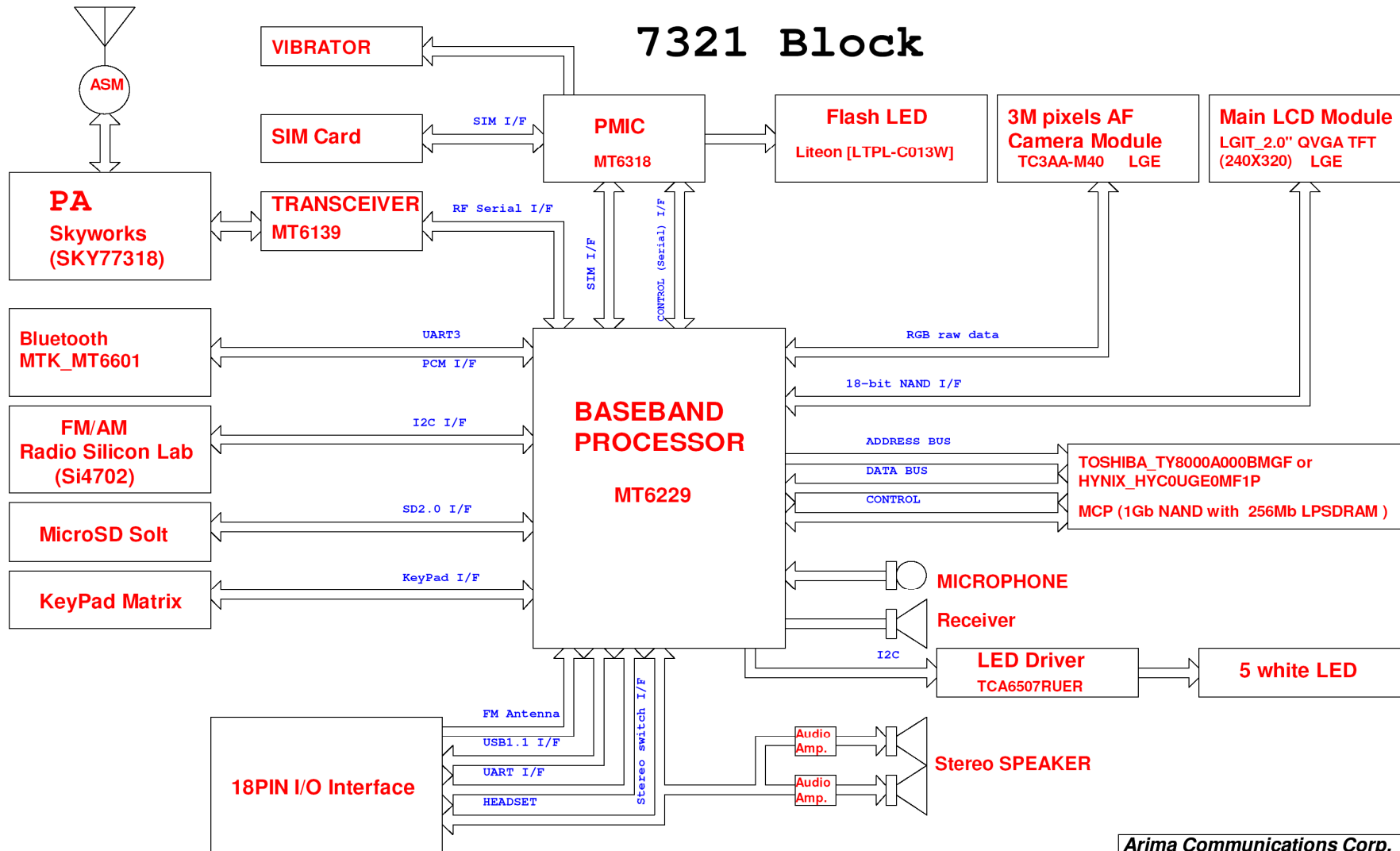


8. If download failed, you will see the below picture.



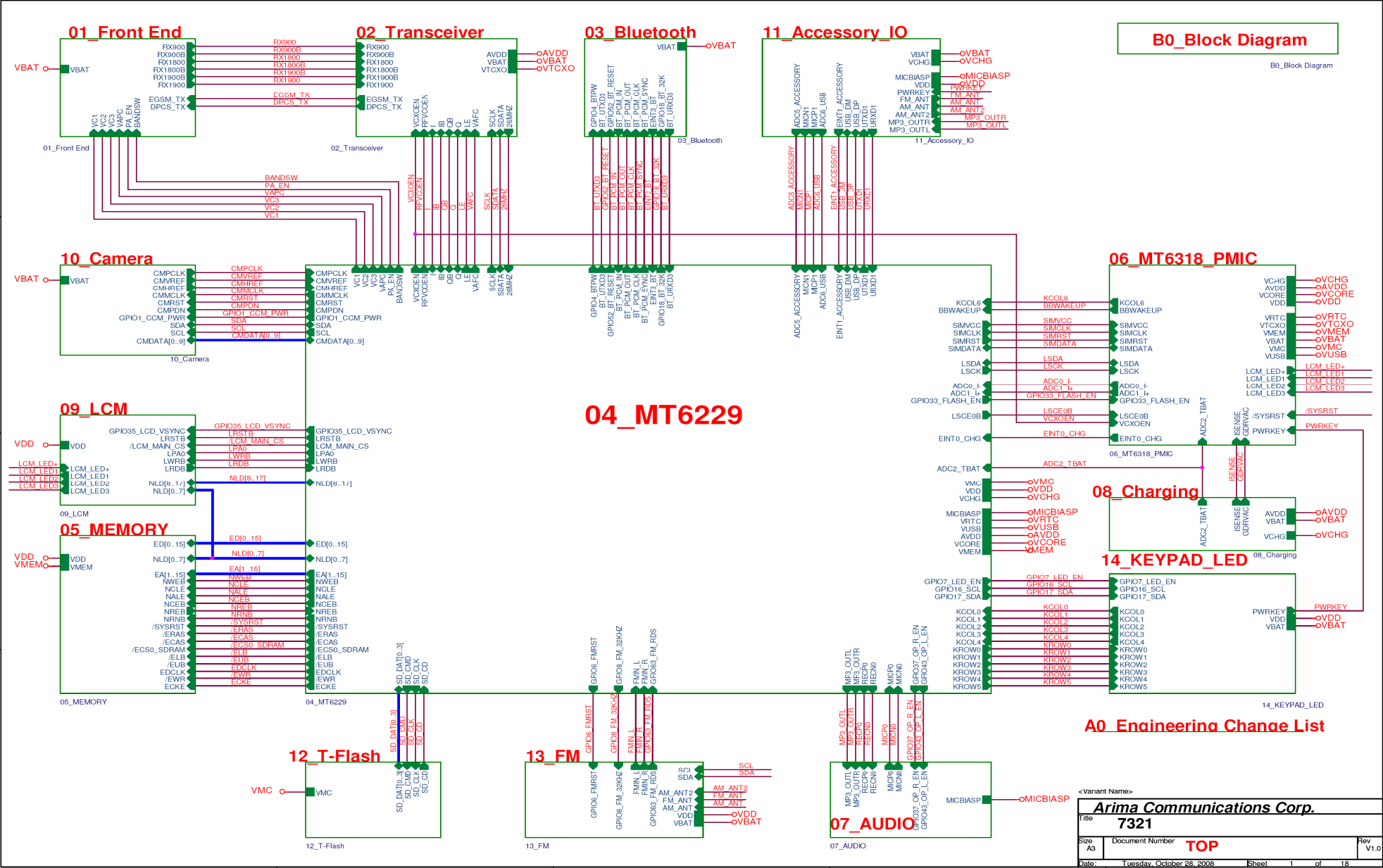
Attention: If you have happened wrong, Please try close LEO and try open again.

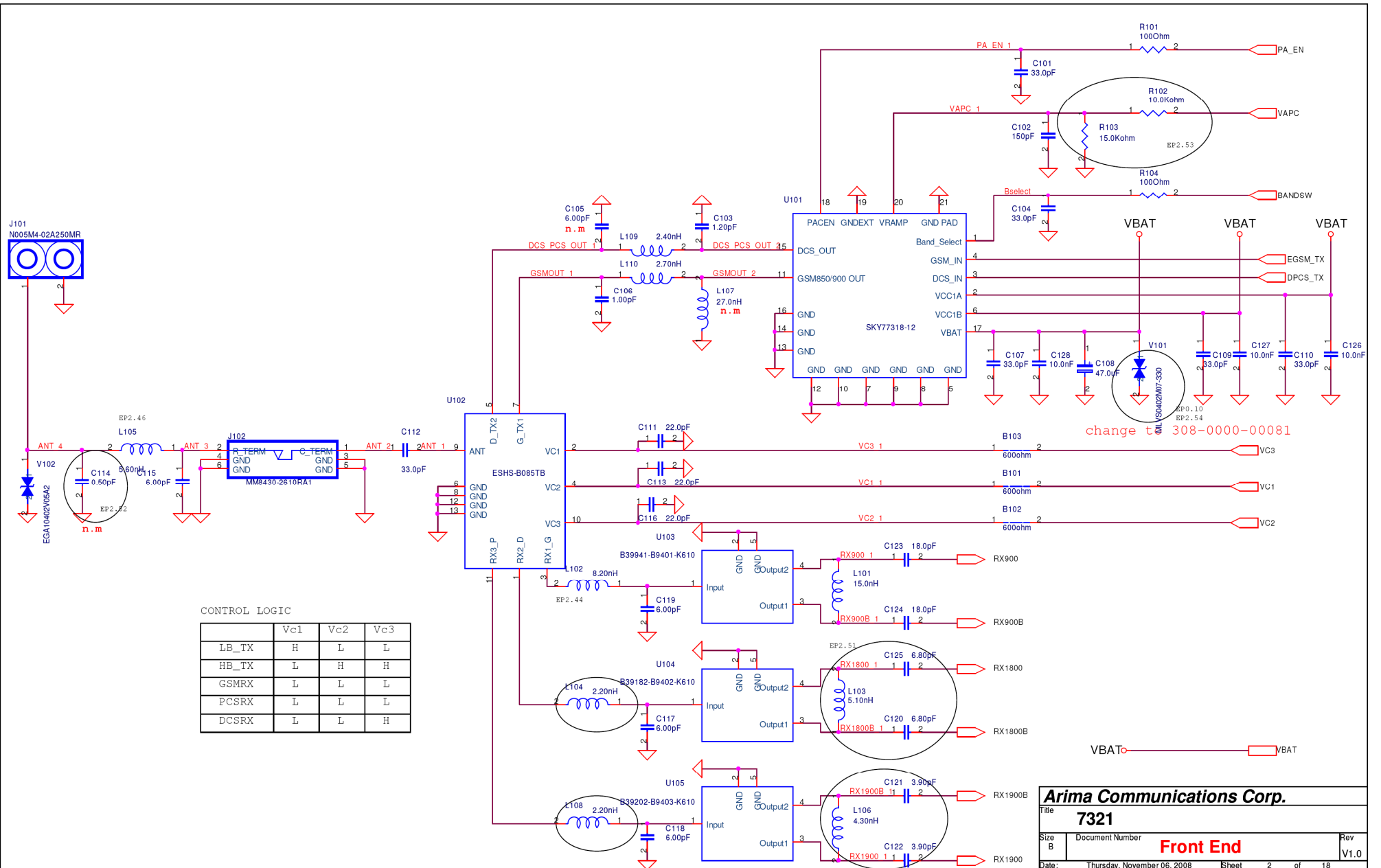
6. BLOCK DIAGRAM



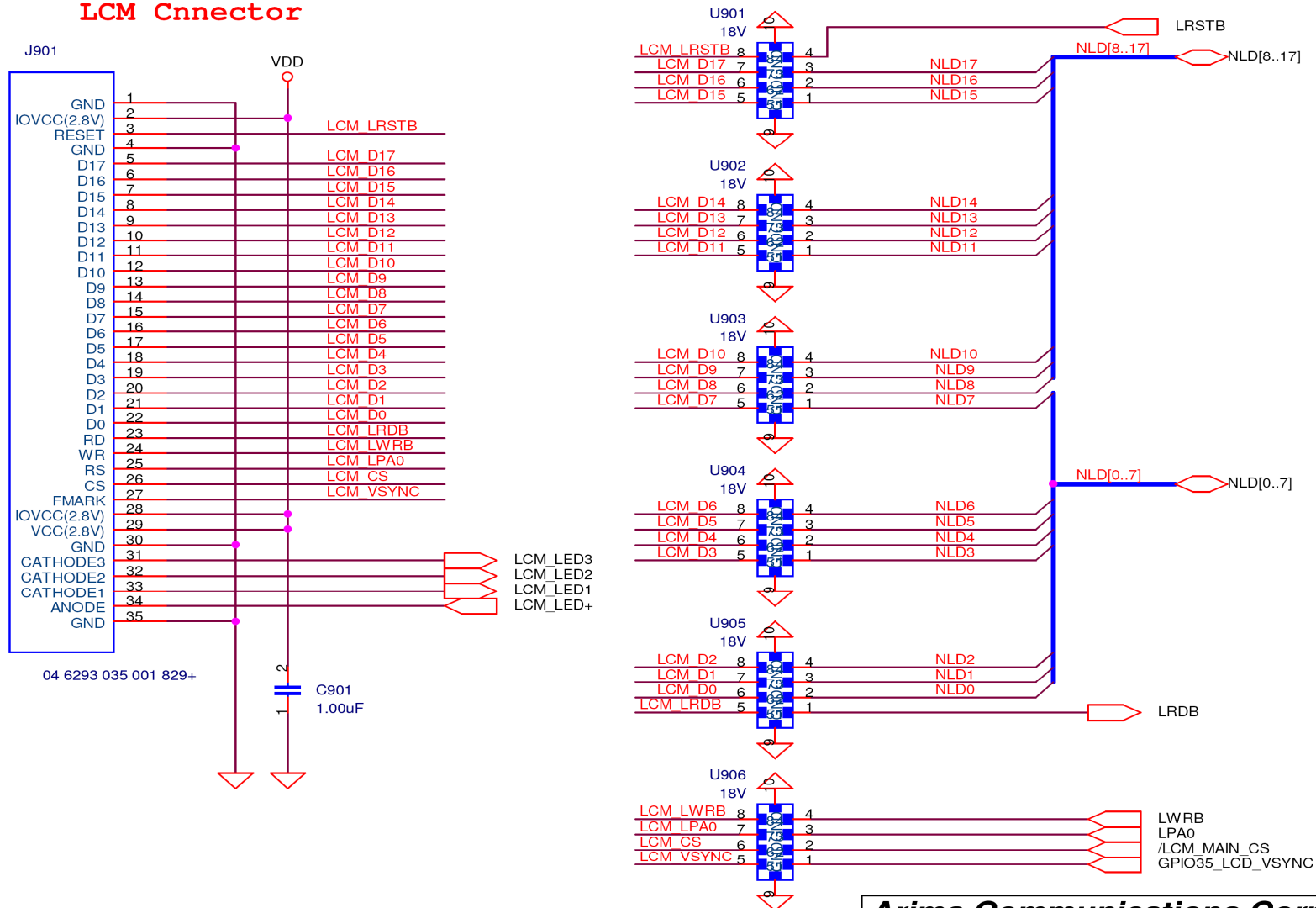
Arima Communications Corp.
7321

7. CIRCUIT DIAGRAMA





LCM Connector



Arima Communications Corp.

Title **7321**

Size A

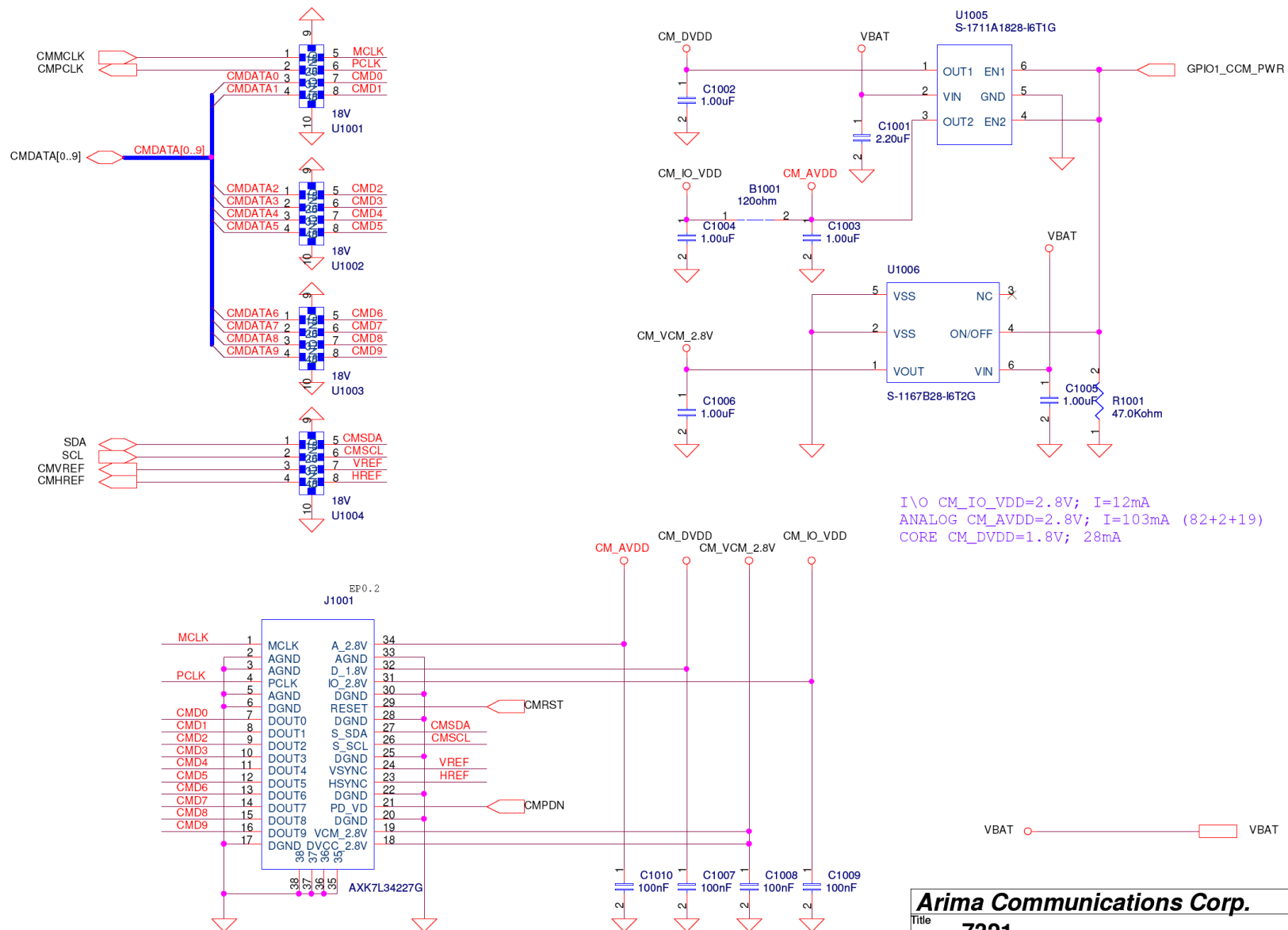
Document Number

LCM

Rev V1.0

Date: Tuesday, October 28, 2008

Sheet 11 of 18



Arima Communications Corp.

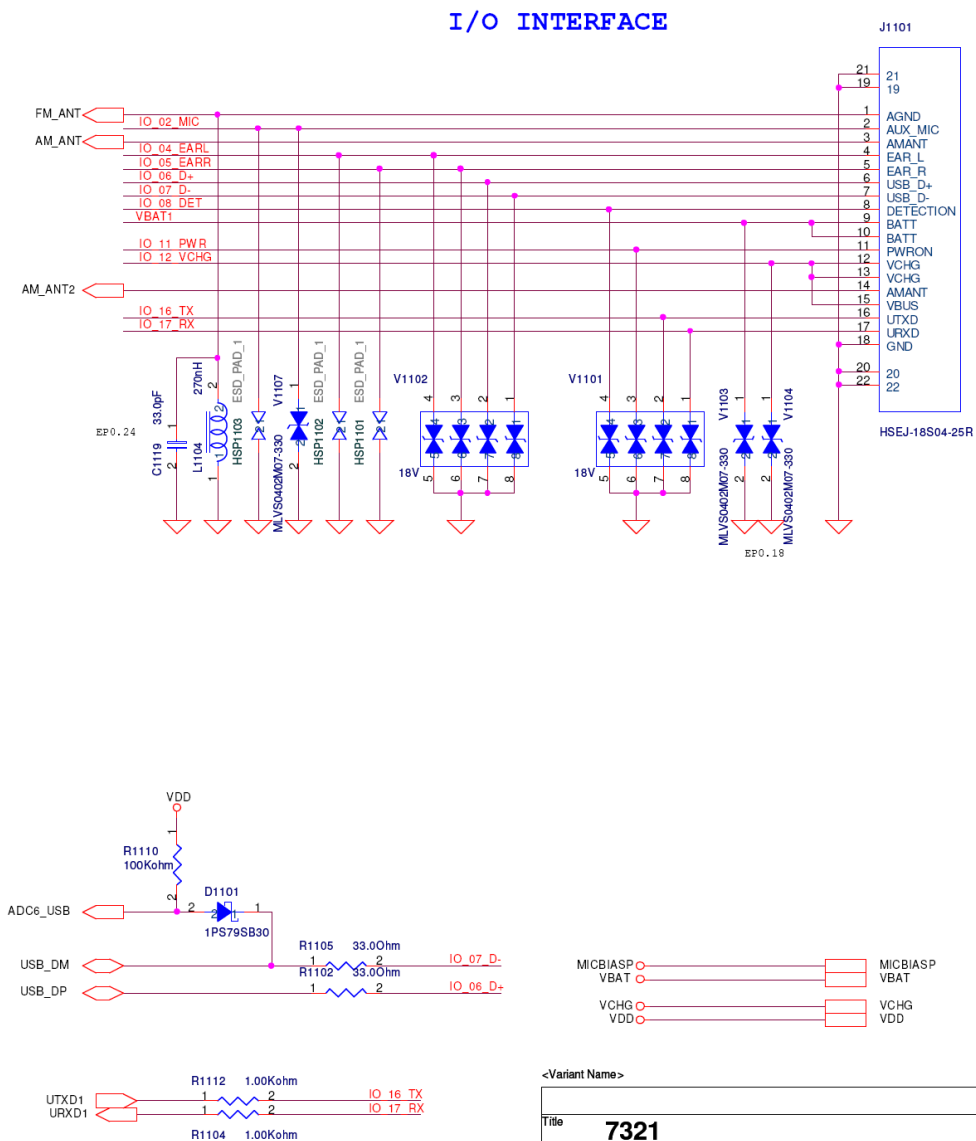
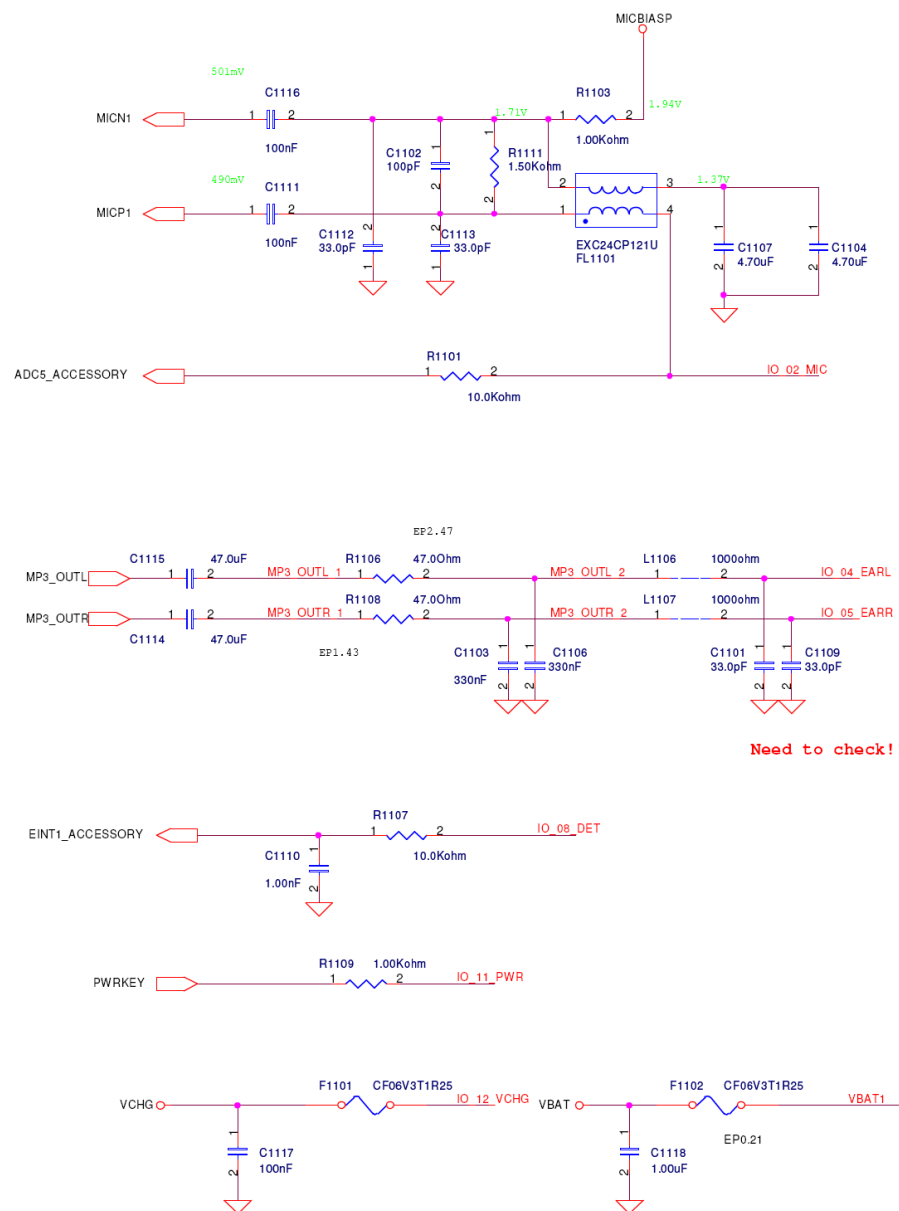
Title
7321

Size A4 Document Number

Camera

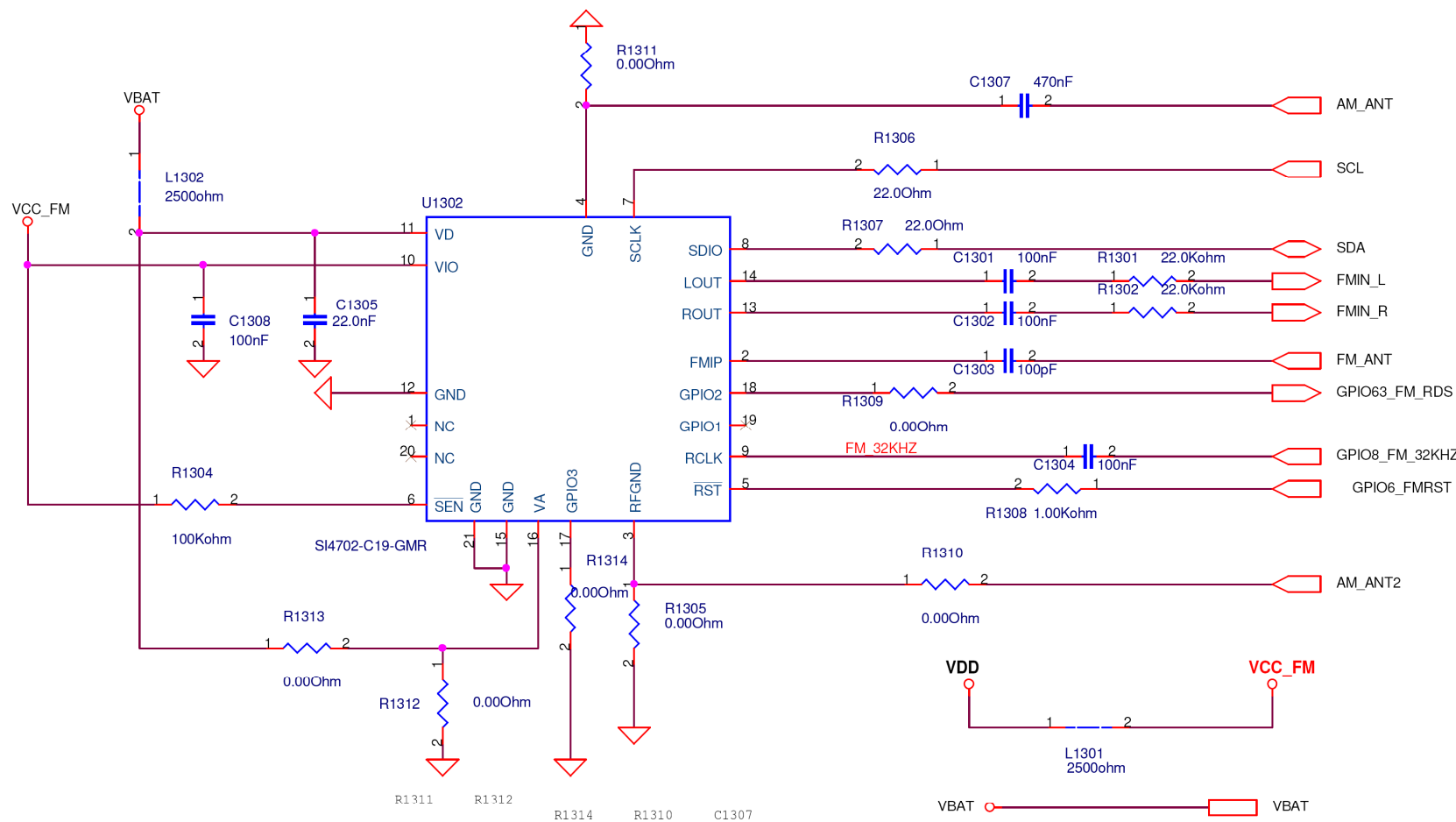
Rev
V1.0

Date: Tuesday, October 28, 2008 Sheet 12 of 18



<Variant Name>			
Title	7321		
Size	Document Number	Accessory_IO	Rev V1.0
B	Date:	Tuesday, October 28, 2008	Sheet 13 of 18

FM Radio



	U1302	R1313	R1311	R1312	R1314	R1310	C1307
	Si4731	n.m	n.m	0 ohm	0 ohm	0 ohm	470nF
	Si4702	0 ohm	0 ohm	n.m	n.m	n.m	n.m

Arima Communications Corp.

Title
7321

Size
A Document Number

13 FM

Rev
V1.0

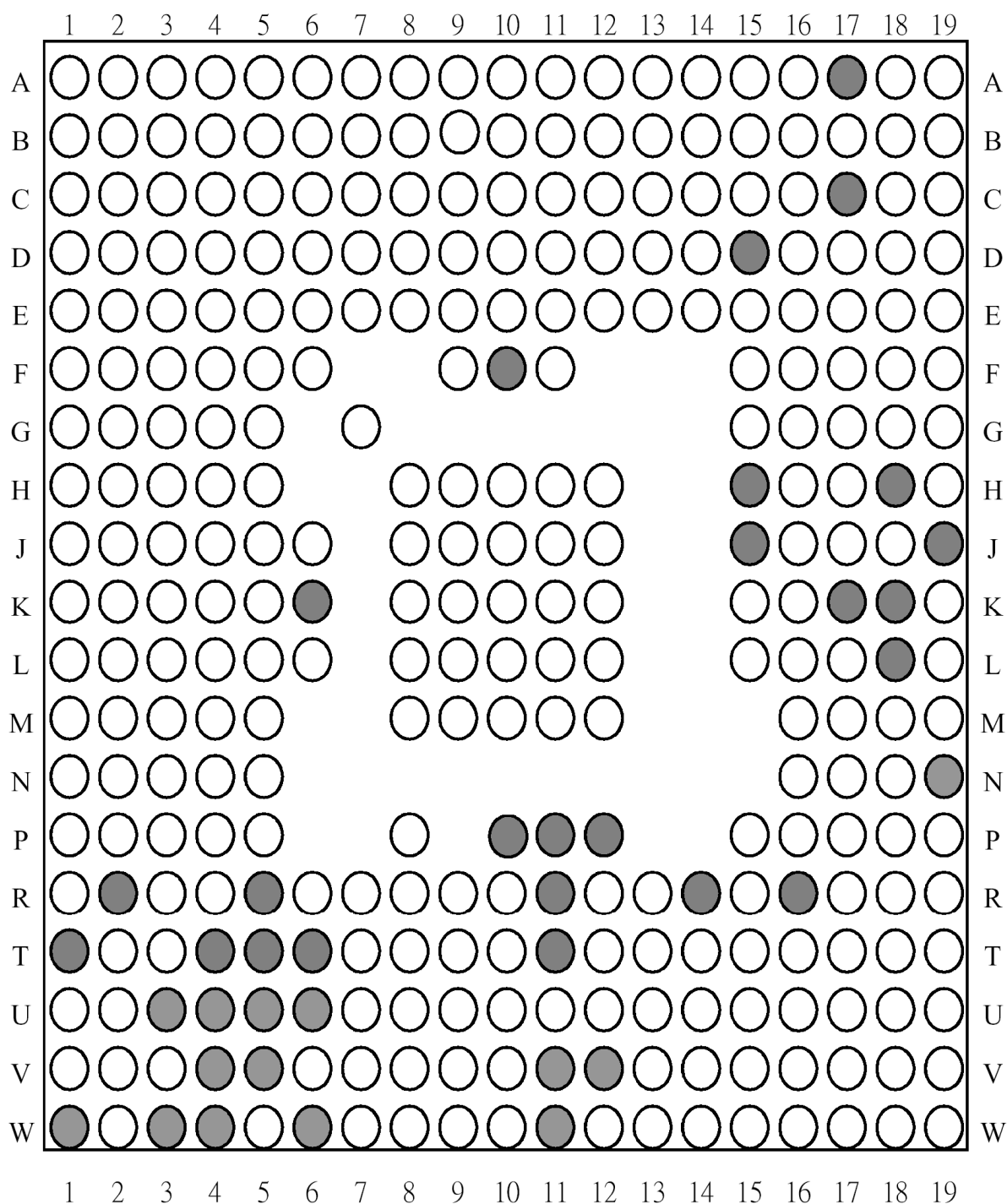
Date: Tuesday, October 28, 2008 Sheet 15 of 18



8. BGA IC PIN Check

8.1 BGA PIN Check of main chip (MT6229)

BB_MT6229 (U401)

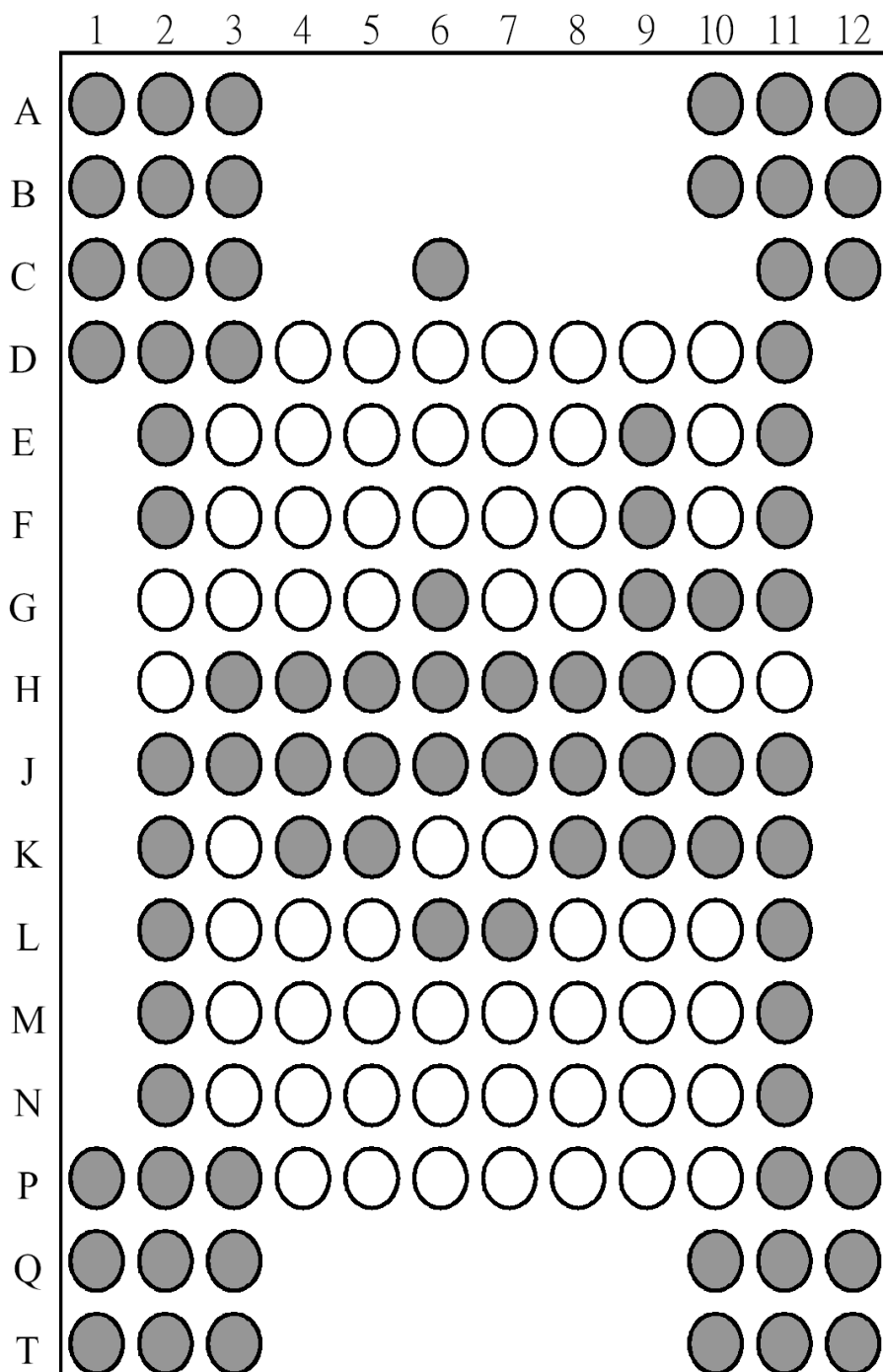


○ BGA use

● BGA non-use

8.2 BGA PIN Check of Memory(HYC0UGE0MF1P-5SH0E)

MCP_HYC0UGE0MF1P-5SH0E (U501)

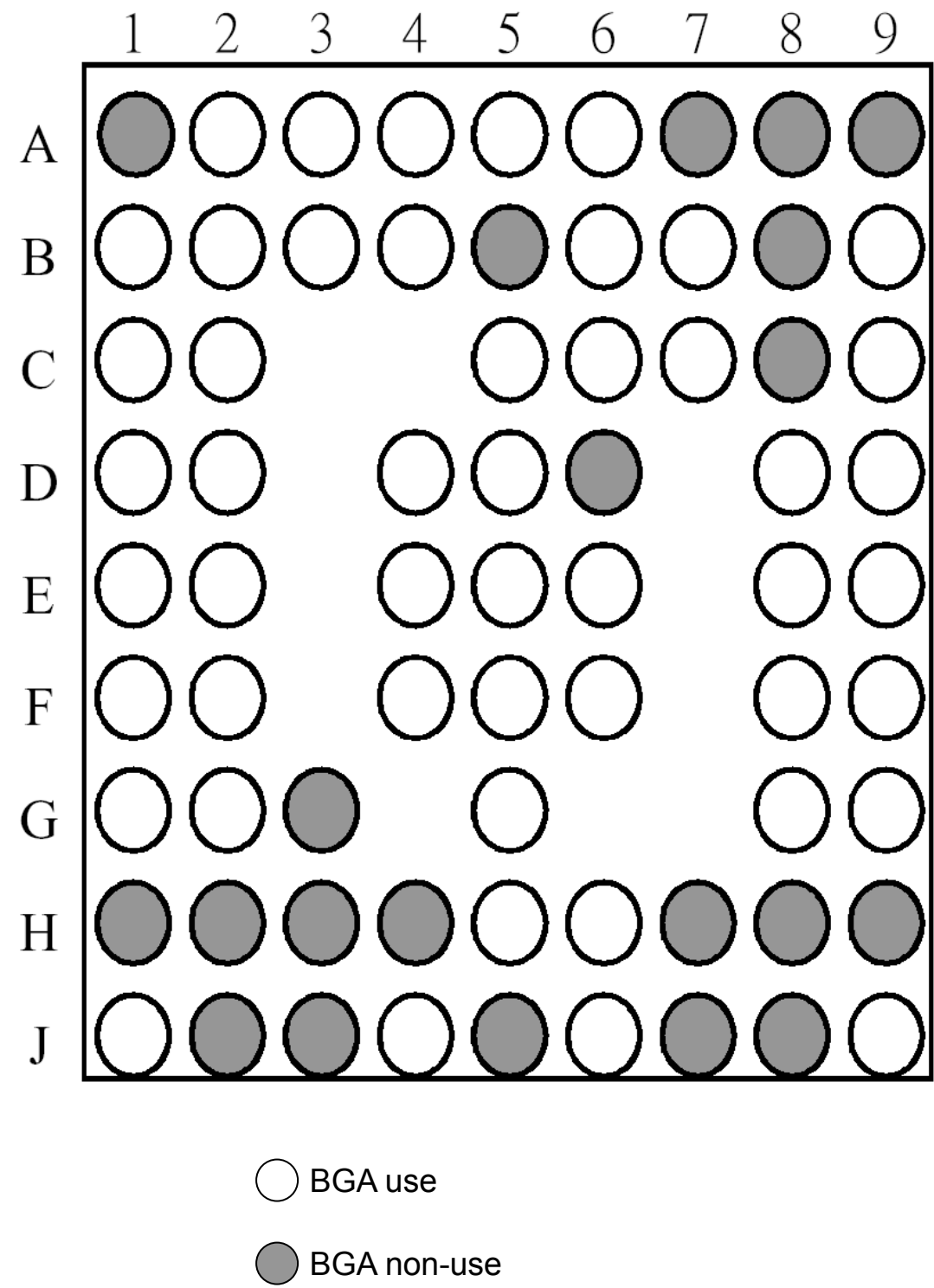


○ BGA use

● BGA non-use

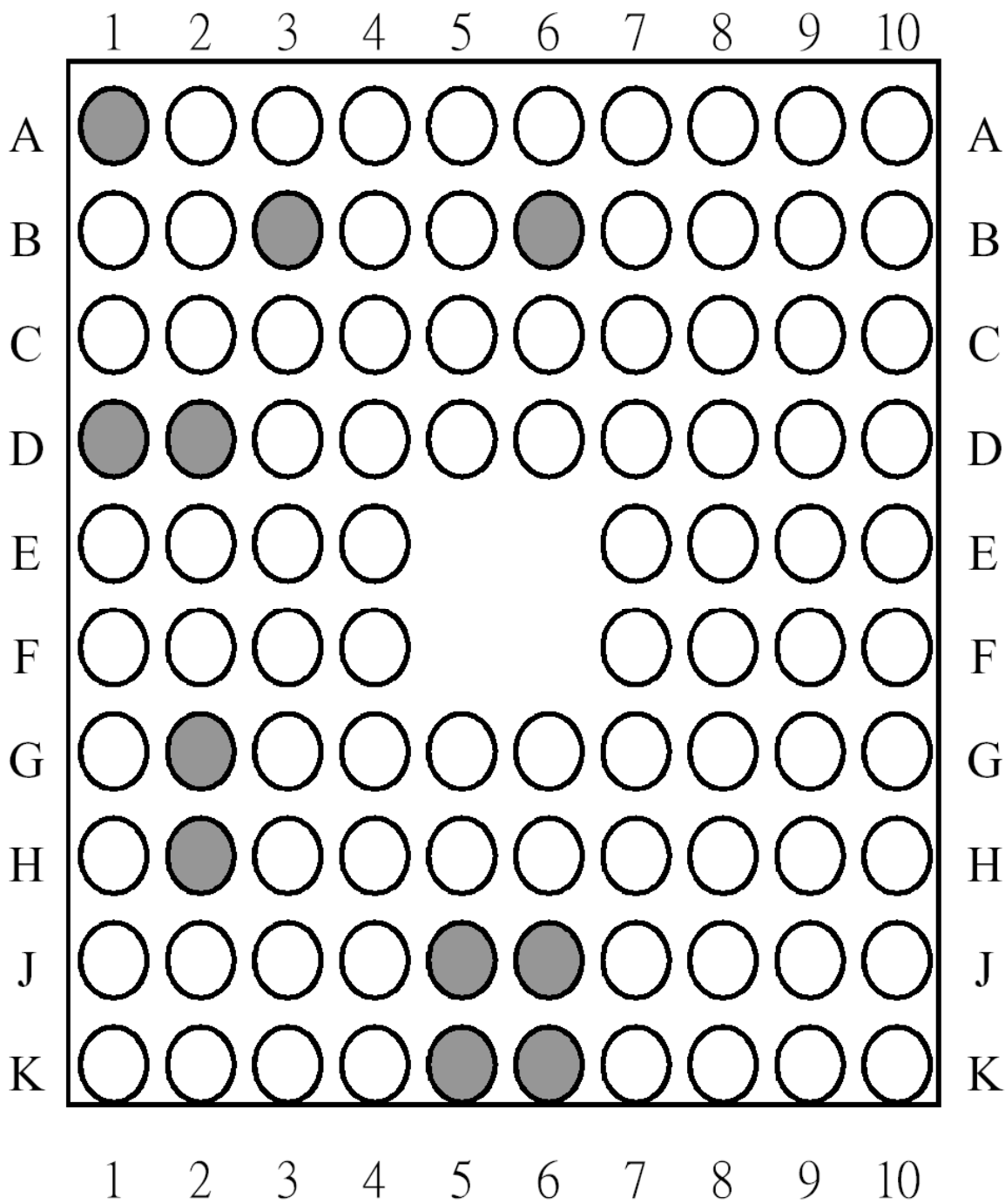
8.3 BGA PIN Check of Bluetooth (MT6601)

MT6601 (U301)



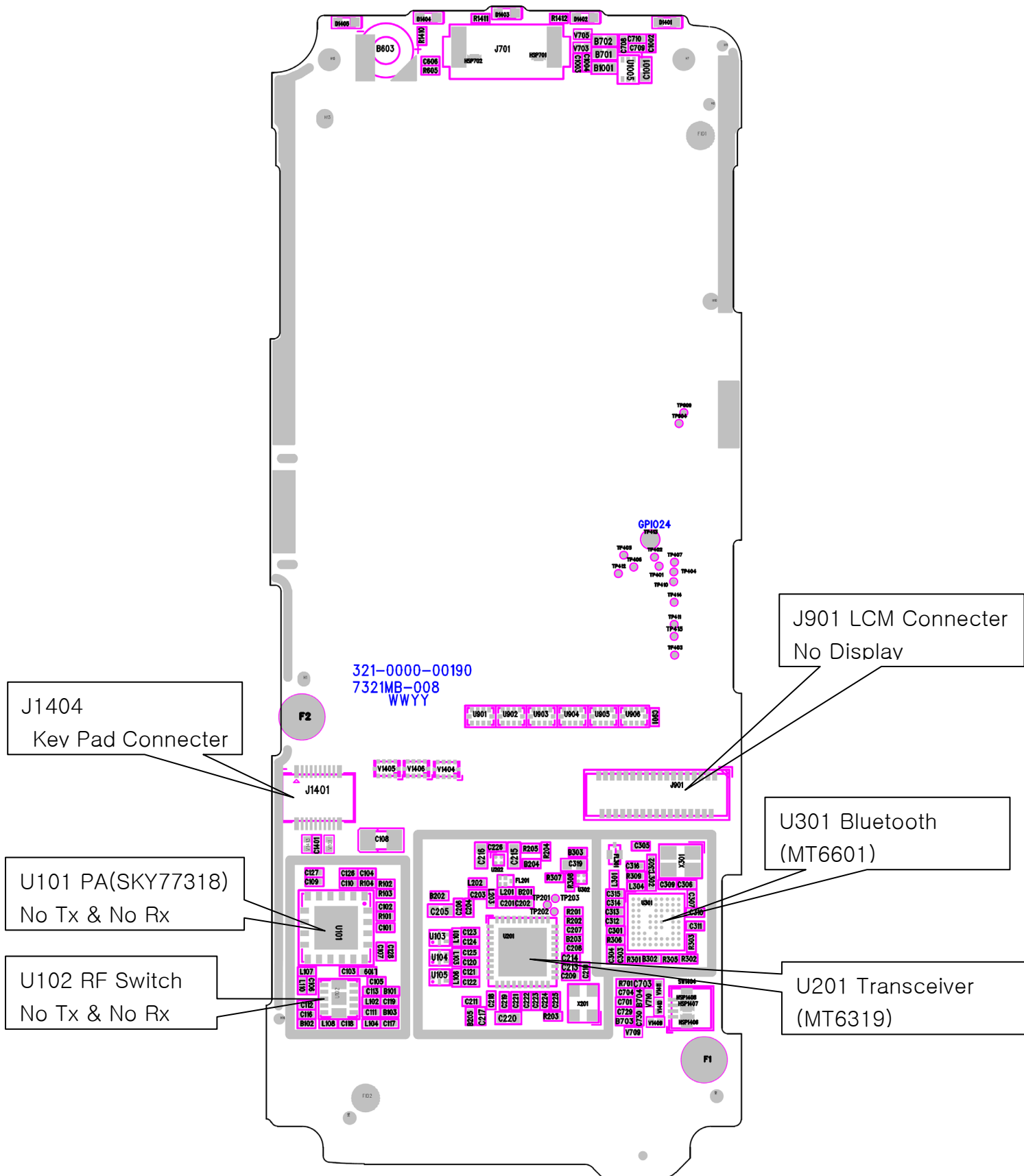
8.4 BGA PIN Check of PMIC (MT6318)

MT6318 (U601)



○ BGA use
● BGA non-use

9. PCB LAYOUT



10.Engineering Mode

1. Test purpose

- a) To verify Appearance by visual check
- b) To verify recognition of SIM card
- c) To verify Function Test in the table shown as below
- d) To verify power down phone

2. Test System

- 1. Power Supply Unit (PSU)+Dummy Battery or Battery
- 2. Test SIM Card (Spec: GSM Phase 2+ Test SIM Standard 1(3.1))
- 3. Sample Hands free Kit (SHF, Stereo)

3. Test Procedure

3.1 Appearance Test

Verify appearance by visual check

3.2 SIM Test

Verify recognition of SIM card

If “Insert SIM” indicated on Display, it is NG.

3.3 Enter Service Mode

3.1.1 No SIM Card installed

- a. Power on Phone
- b. Press **878** to enter service mode.

3.1.2 SIM Card installed

- a. Power on Phone
- b. Press ***#878#** to enter service mode.

3.1.3 Software Version Check

Select item 8 “Version” in Factory mode to check software version.

4 MMI Tests

1. Auto test
2. TV Out Test
3. Echo Loop
4. ANTENNA TEST
5. Camera test
6. SHOW, IMEI, BT, SW Version
7. BT mode
8. Version
9. Keypad
10. Vibrator
11. Loud Spk
12. Ring Tone
13. LED
14. LCD
15. Receiver
16. ADC
17. Charger
18. Headset
19. RTC
20. MTBF
21. UART
22. Memory card
23. Nand flash
24. FM Radio
25. Total call time

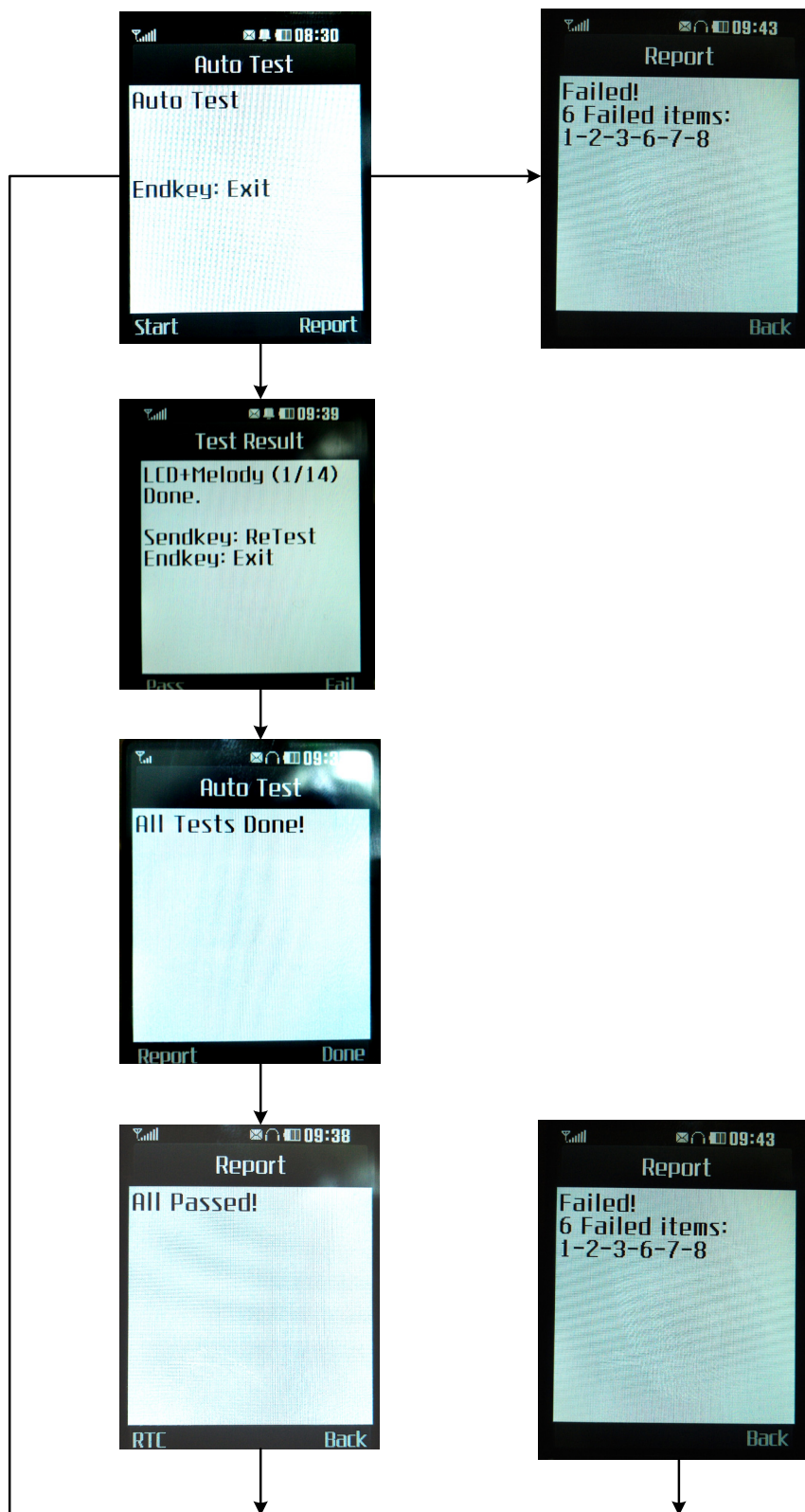
Auto Test Mode

This auto test mode is designed to do the baseband test automatically. When you finish all tests, phone will report the result for you.

Enter and Exit Auto Test Mode

In the idle screen, enter “*#878#” and the Auto Test Mode menu will show up. In Auto Test Mode main menu, press Left-Soft-Key (LSK) “Start” will process the test automatically or End key to go back to the idle screen.

Work Flow



All Auto Test

LCD+Melody, BackLight+Vib+Flashlight, MIC, KeyPad, RTC, Headset, FM-Radio, AM-Radio, Bluetooth, FM-ADCTemp, NAND, MemoryCard, CAMERA, Antenna

1. LCD+Melody

LCD will show white, black and color pattern pictures in turn.

At the same time, phone will play music to check speaker component.

2 .BackLight+Vib+Flashlight

LCD Backlight, key light, flash light and led indicators are on for 0.5 seconds at the same time, then off.

3 .MIC

Enable microphone audio path to pass input sounds to receiver for checking the microphone and receiver component.

4 .KeyPad

Test all keypad keys. All the keys are displayed on the screen. When a key is pressed, the depression is detected and the key disappears from the screen. Once all keys are detected, the test stops and exits.

5 .RTC

To test the real time clock.

6. Headset

To test the analog loop back path from headset MIC to headset Receiver.

7 .FM-Radio

Force FM-Radio to receive FM signal and show the RSSI in 100.7 MHz channel.

1.10 AM-Radio ((if present)

Force AM-Radio to receive AM signal in 657 Hz channel.

8. Bluetooth

Inquiry BT device near the phone and show the device's BD address.

9. FM-ADCTemp

Query if the temperature of phone is reasonable.

10. NAND

To test the NAND flash.

11 .MemoryCard

To test the Memory card plug-in and plug-out with type detection (MS, MMC, SD).

12. CAMERA

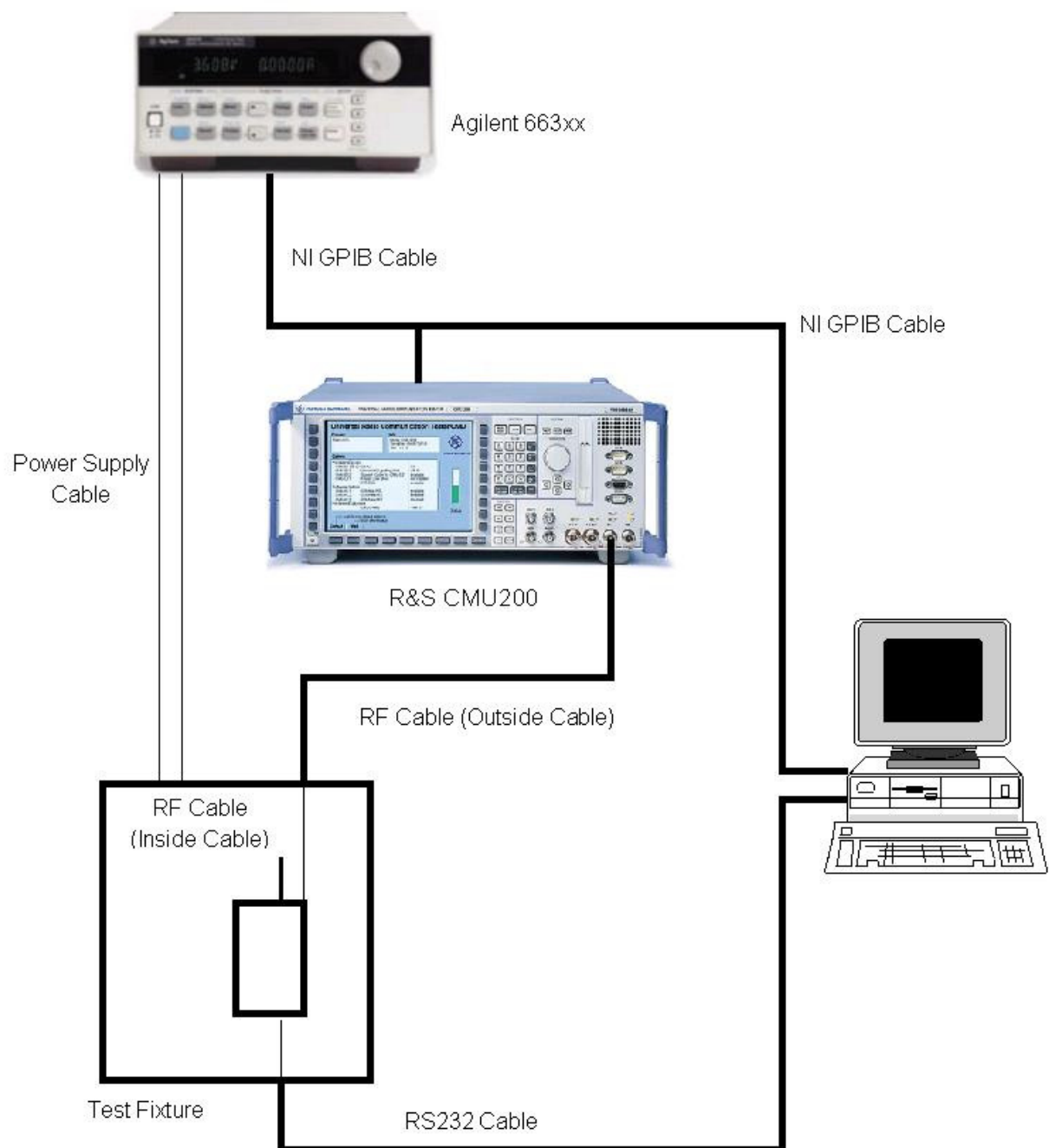
To test the Camera module via preview, capture, and picture preview.

13.Antenna

To test the antenna module.

11.CALIBRATION

11.1 Test Equipment set up



11.2 Calibration tool (ATE TOOL)

Environment Requirement:

OS:

MS Windows 2000 or XP

Hardware:

Generic Pentium III or above PC (256M RAM or above)

GPIB Card

- National Instruments GPIB device and driver
- Agilent GPIB card and driver
- KEITHLEY GPIB card and driver

Radio Communication Tester

- Rohde & Schwarz CMU 200
- Agilent 8960
- Anritsu MT8820
- Rohde & Schwarz CMD55
- Willtek WT4400
- Agilent N4010A (for Bluetooth test)
- Rohde & Schwarz CBT (for Bluetooth test)
- Anritsu MT88852 (for Bluetooth test)

DC Power Supply

- Agilent 661x or Agilent 663x2 series power supply
- R&S NGSM Power Supply
- KEITHLEY 2303, 2304, 2306
- Agilent 3631A power supply
- Willtek WT4400 power supply option

Others

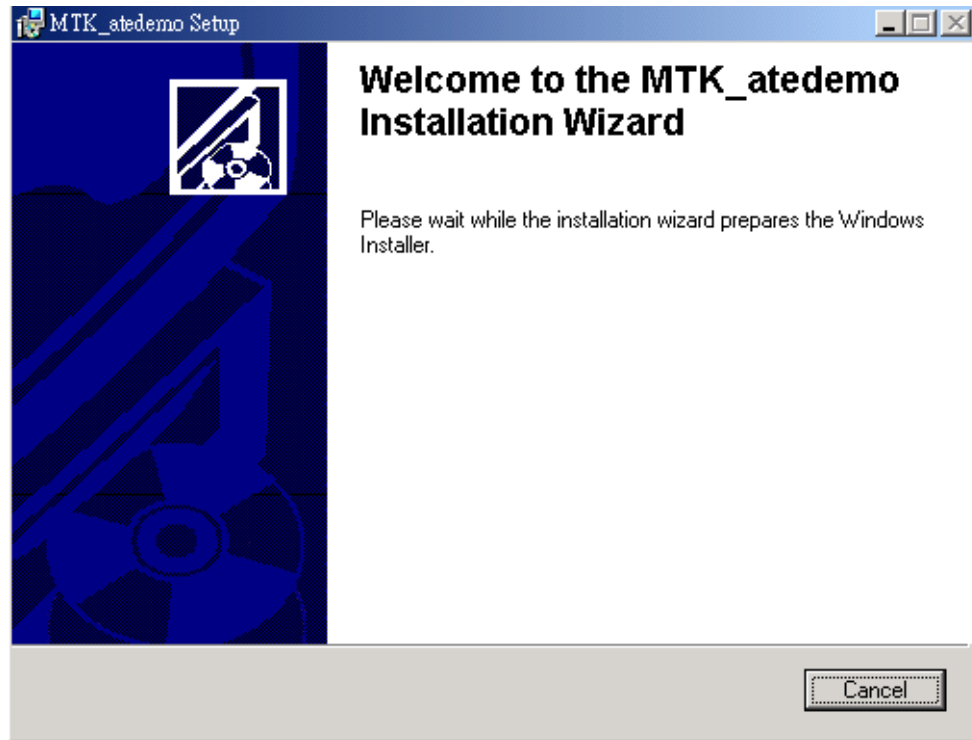
USB download cable
Dummy battery
RF cable

The following diagrams depict the system setups when using the R&S CMU200 or Agilent test platform.

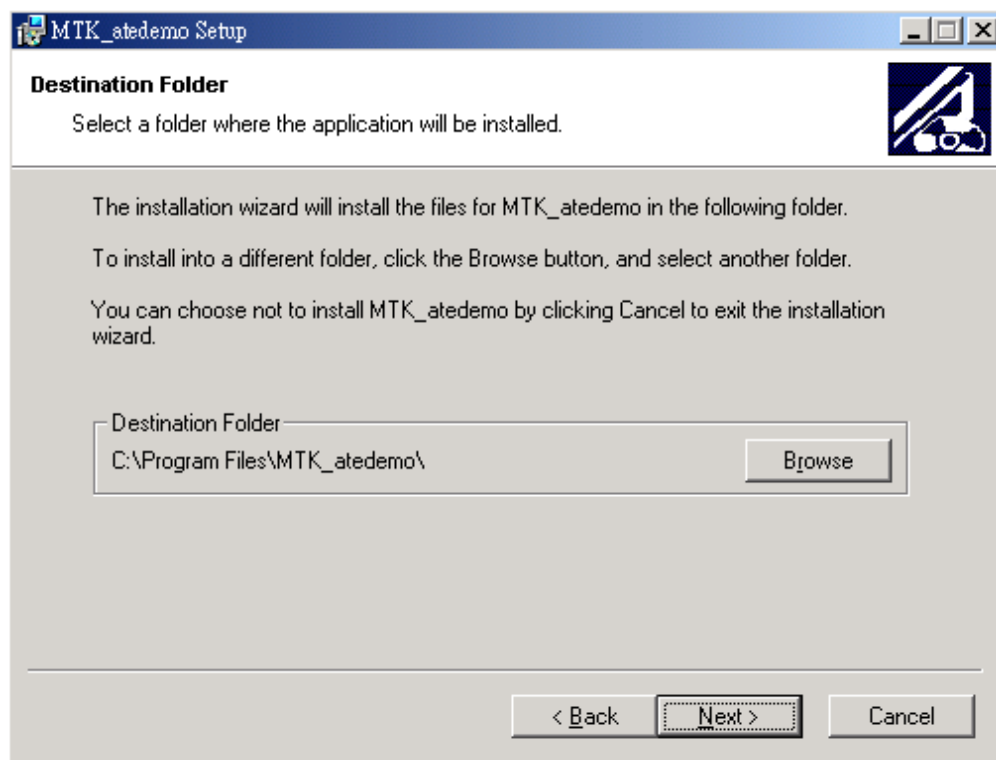
Connect 8960, power supply ,computer ,phone



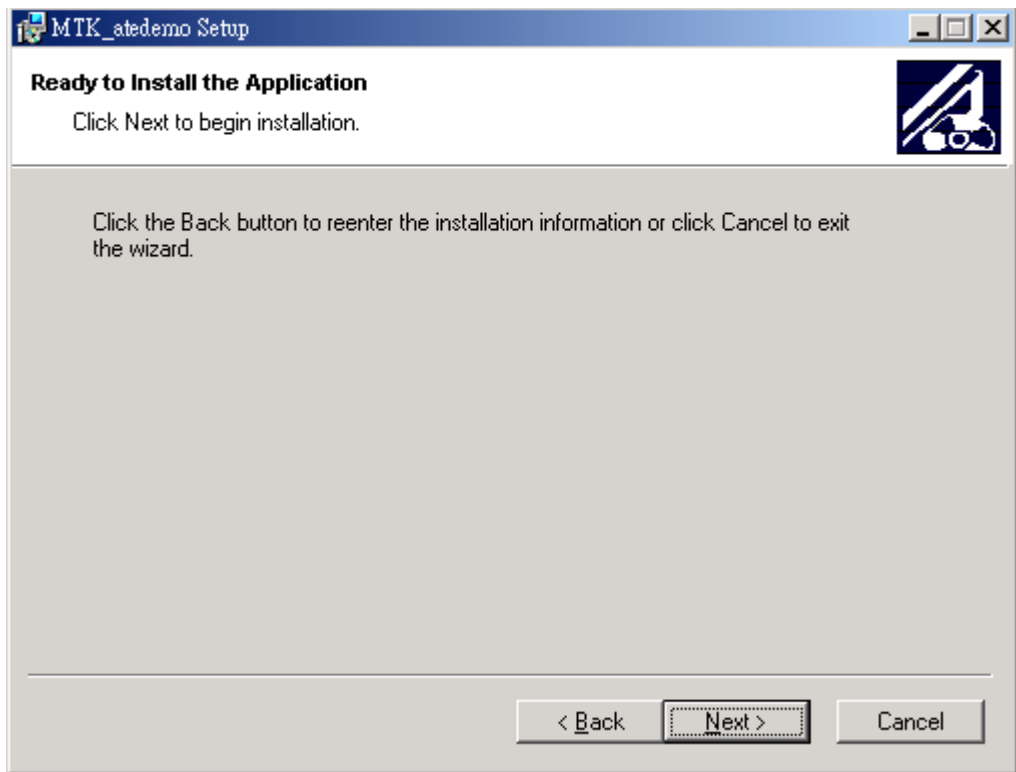
To install the MTK ATE tool, execute the setup.exe file. The Installation Wizard guides the user through the installation process step by step.



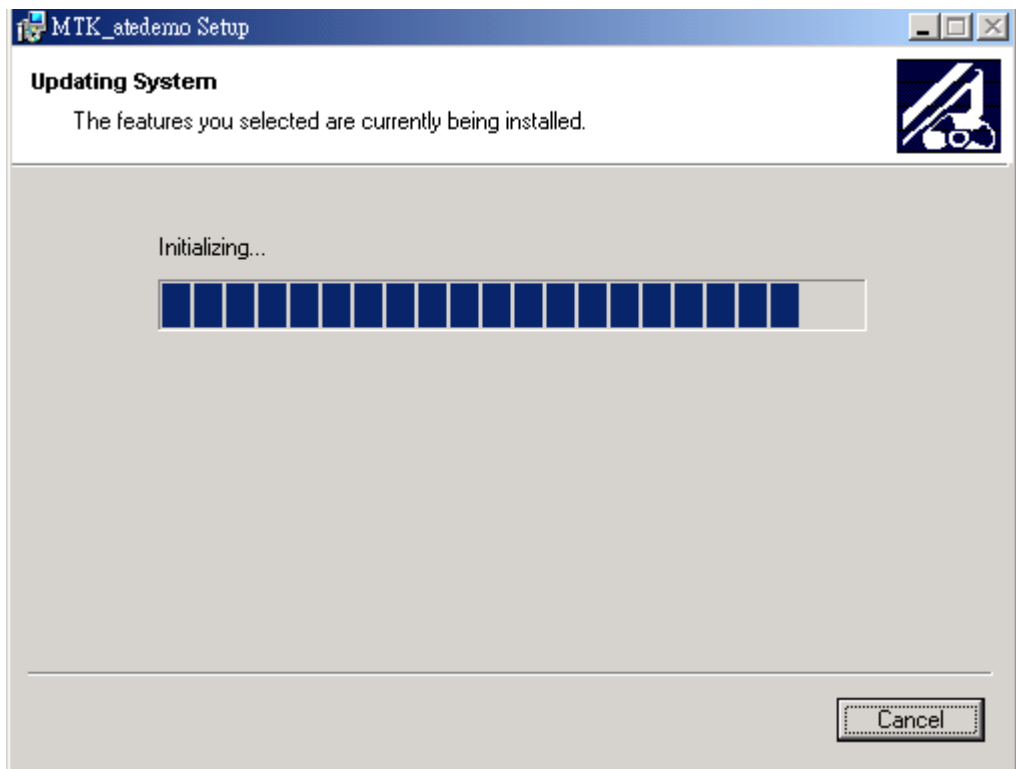
Press Next



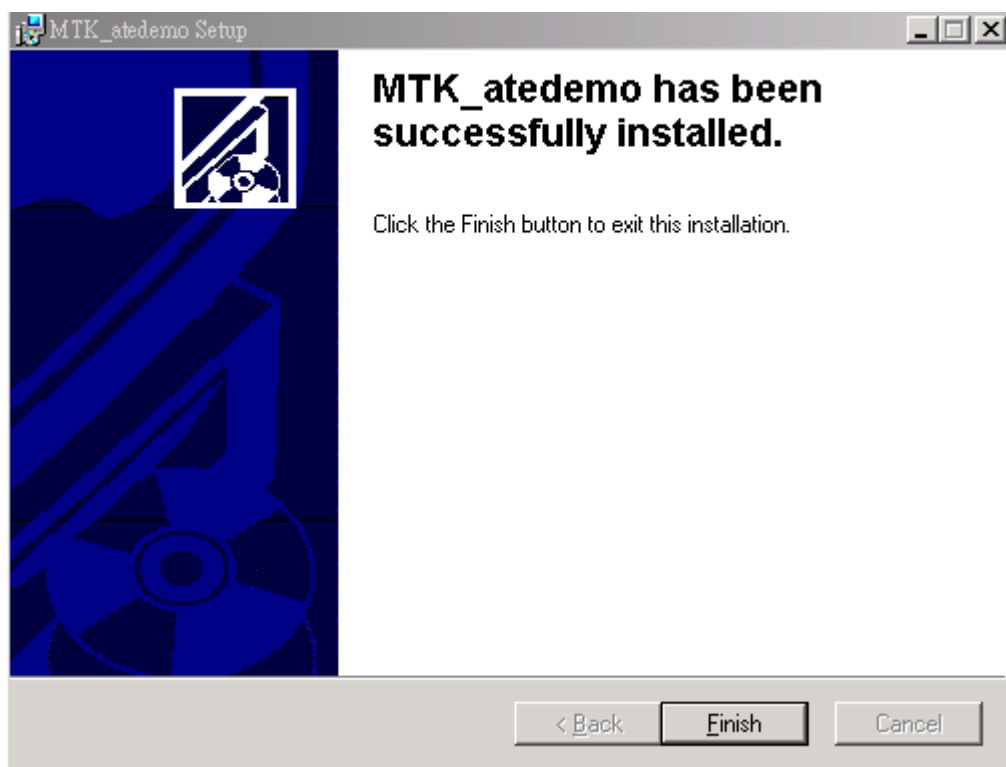
Press Next



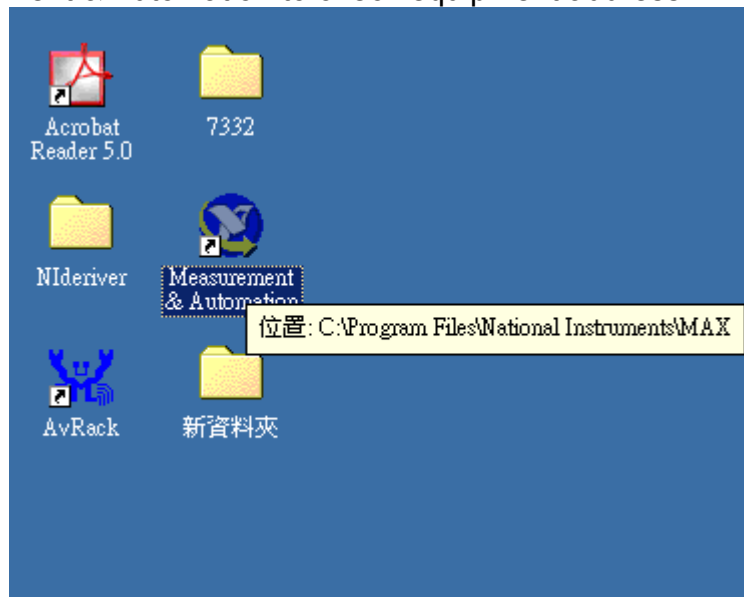
Start install



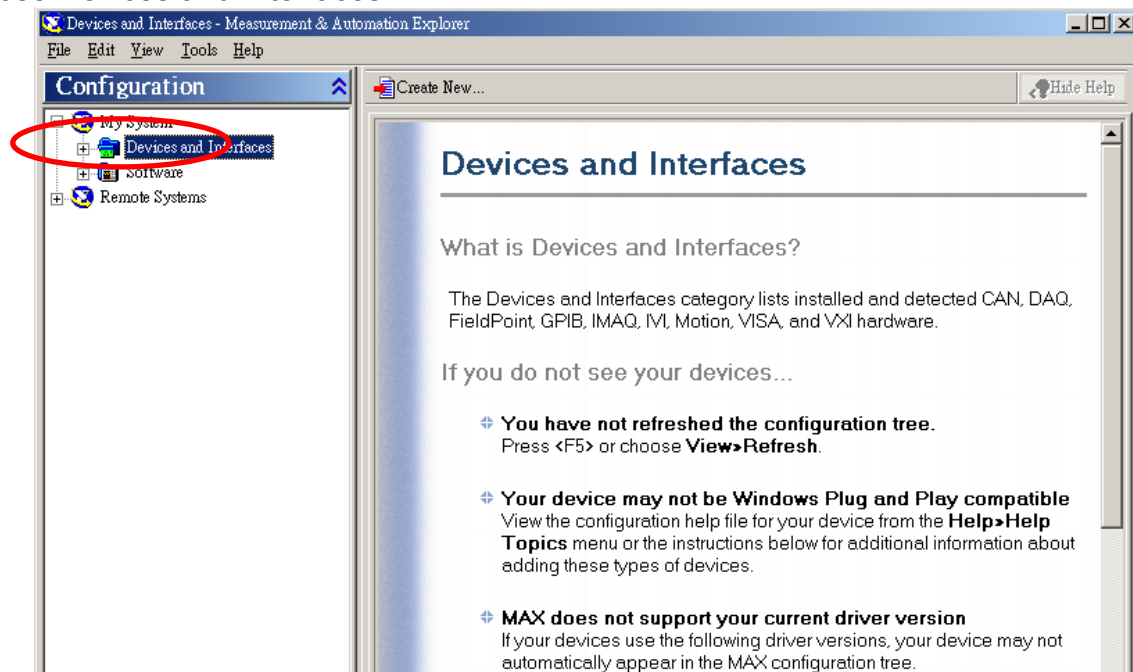
Press finish and install finish



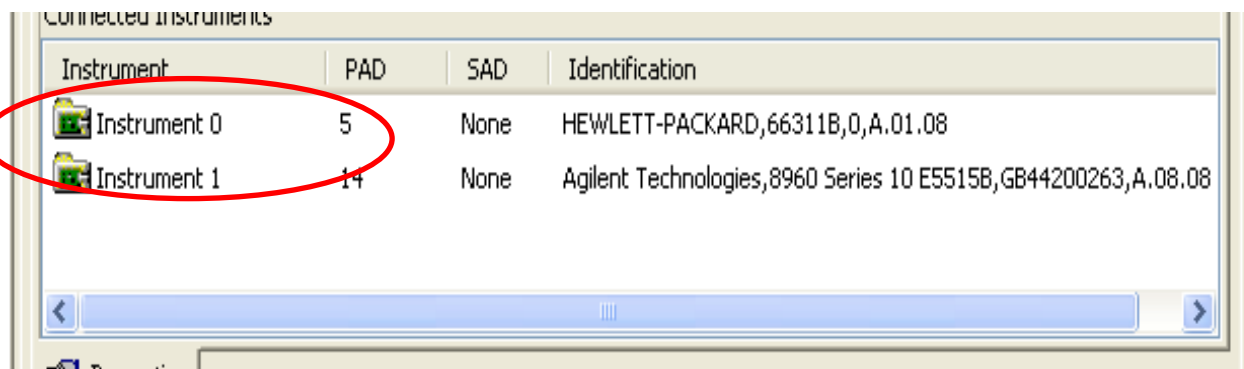
Execute Measurement & Automation to check equipment address



Choose Devices and Interfaces

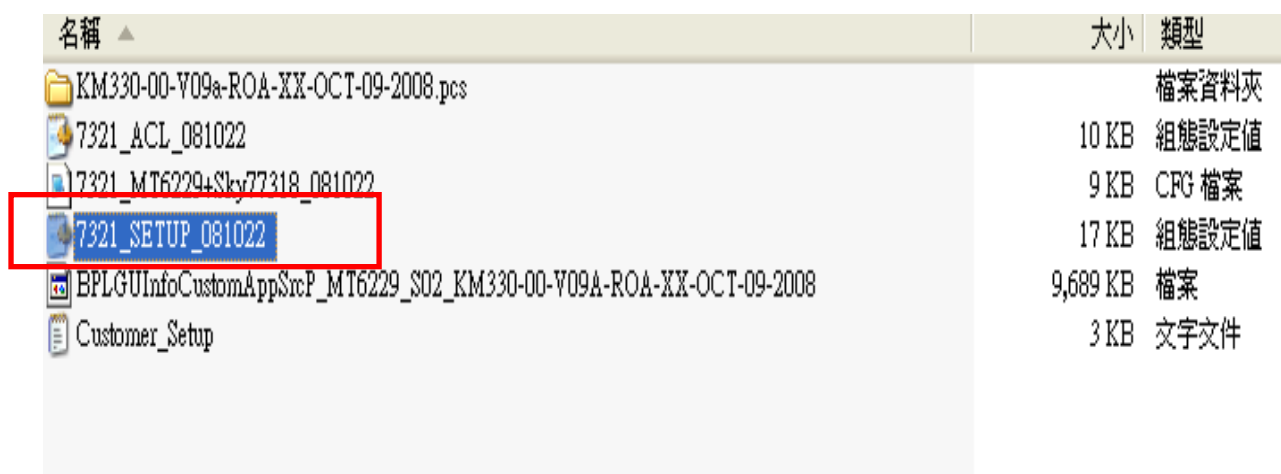


You can see your equipment address



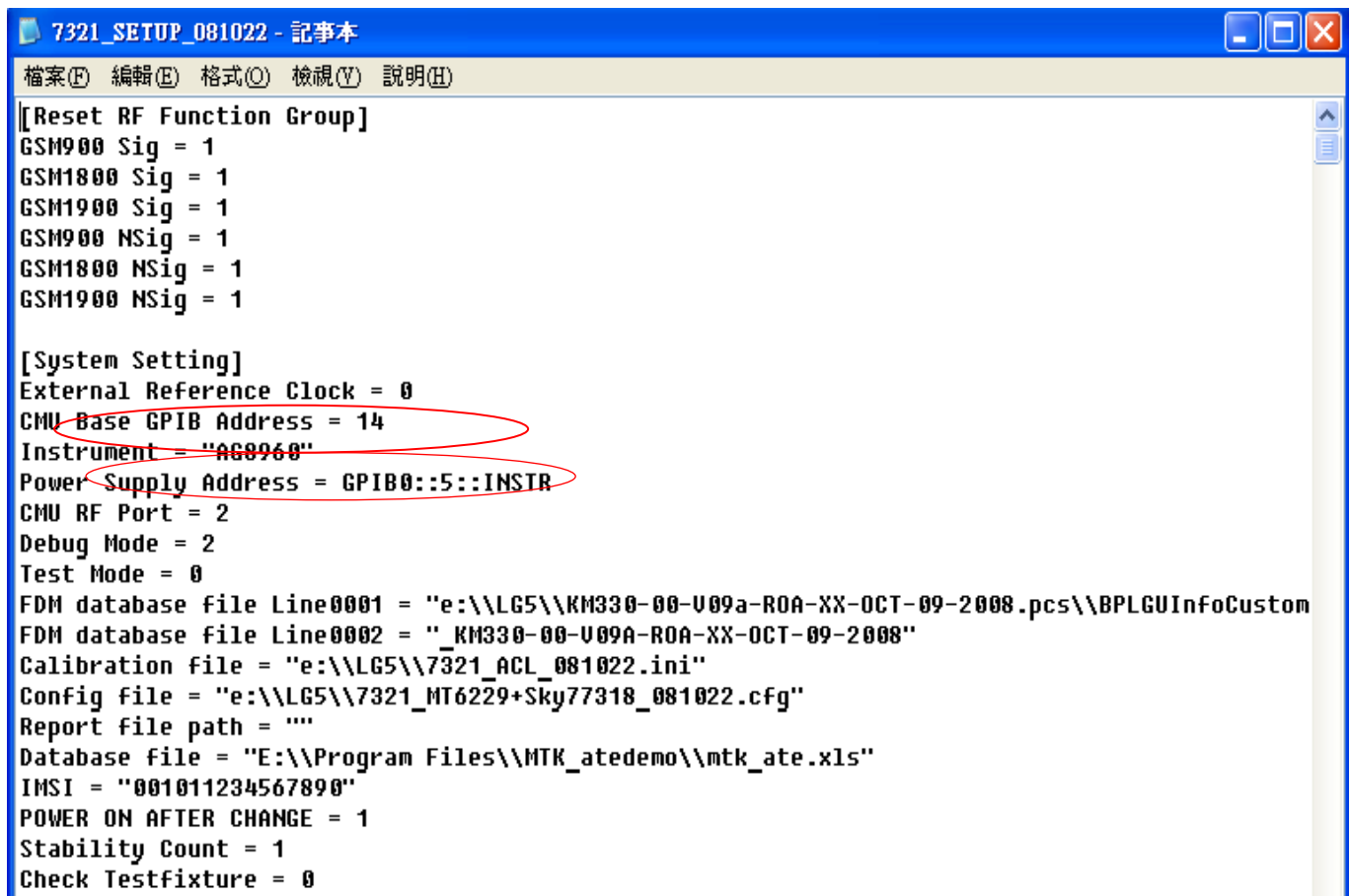
Instrument	PAD	SAD	Identification
Instrument 0	5	None	HEWLETT-PACKARD,66311B,0,A.01.08
Instrument 1	14	None	Agilent Technologies,8960 Series 10 E5515B,GB44200263,A.08.08

Choose **7321_SETUP_081022.ini** and open the file to setup from data files



名稱	大小	類型
KM330-00-V09a-ROA-XX-OCT-09-2008.pcs		檔案資料夾
7321_ACL_081022	10 KB	組態設定值
7321_MT6229+Sky77318_081022	9 KB	CFG 檔案
7321_SETUP_081022	17 KB	組態設定值
BPLGUIInfoCustomAppSrcP_MT6229_S02_KM330-00-V09A-ROA-XX-OCT-09-2008	9,689 KB	檔案
Customer_Setup	3 KB	文字文件

Setup your CMU Base GPIB address and power supply address

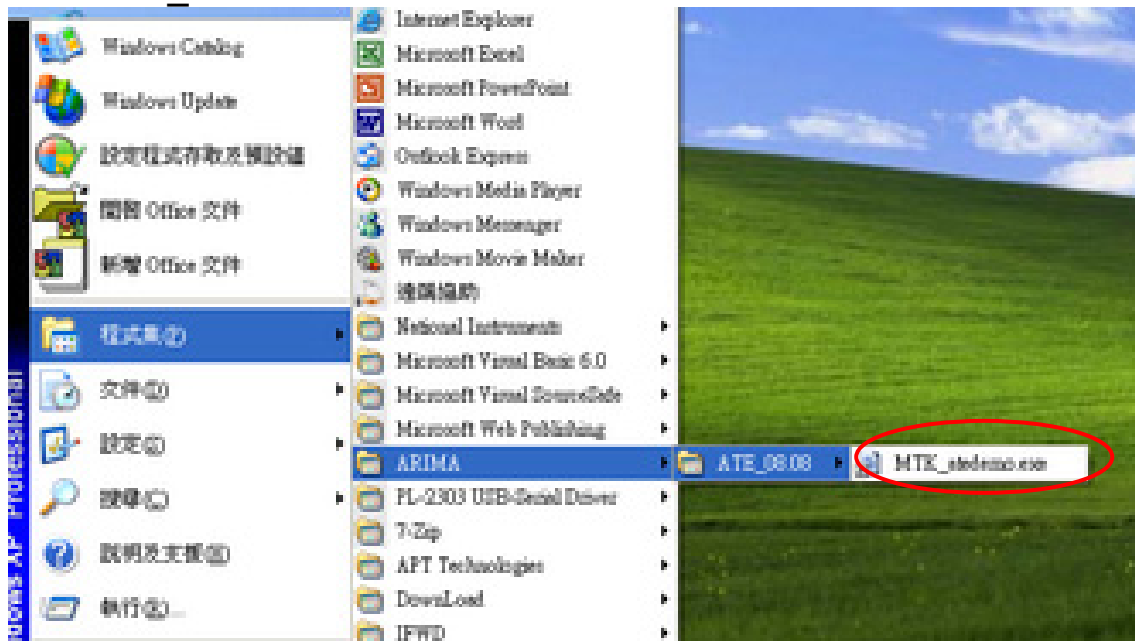


```
[Reset RF Function Group]
GSM900 Sig = 1
GSM1800 Sig = 1
GSM1900 Sig = 1
GSM900 NSig = 1
GSM1800 NSig = 1
GSM1900 NSig = 1

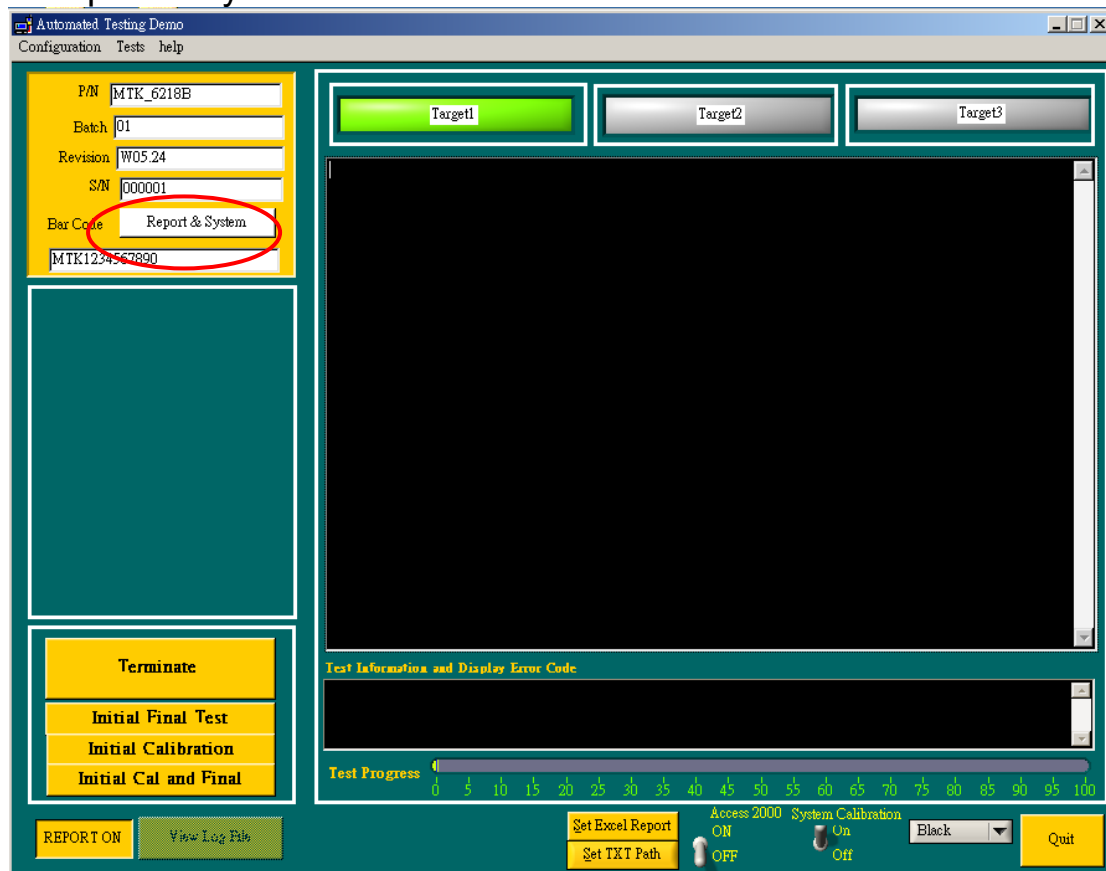
[System Setting]
External Reference Clock = 0
CMU Base GPIB Address = 14
Instrument = "AG8968"
Power Supply Address = GPIB0::5::INSTR
CMU RF Port = 2
Debug Mode = 2
Test Mode = 0
FDM database file Line0001 = "e:\\LG5\\KM330-00-U09a-ROA-XX-OCT-09-2008.pcs\\BPLGUInfoCustom
FDM database file Line0002 = "_KM330-00-U09a-ROA-XX-OCT-09-2008"
Calibration file = "e:\\LG5\\7321_ACL_081022.ini"
Config file = "e:\\LG5\\7321_MT6229+Sky77318_081022.cfg"
Report file path = ""
Database file = "E:\\Program Files\\MTK_atedemo\\mtk_ate.xls"
IMSI = "001011234567890"
POWER ON AFTER CHANGE = 1
Stability Count = 1
Check Testfixture = 0
```


ATE Tool system setting

Execute MTK_ate demo



Press Report & System button



Setting your equipment

The screenshot shows the 'Unit Under Test' software interface with several configuration sections:

- Part Information:**
 - Part Number: MT6226
 - Batch: 01
 - Revision: W05.24
 - Serial Number: 000001
 - Bar Code: MTK1234567890
- GSM/EDGE Cal Setting:**
 - Band: ☐ GSM850 Cal ☒ GSM900 Cal ☒ DCS Cal ☒ PCS Cal
 - RX: ☐ Phase Error (CMU) ☐ IP2 Cal
 - ☐ AFC Cal ☒ PathLoss Calibration
 - TX GSM: ☒ TXIQ ☒ SKY (77328)
 - ☐ RFMD GSM ☐ Full PCL ☐ SKY EPSK (77316)
 - ☐ RENESAS ☒ APC Check ☐ Full PCL EPSK
 - Battery/ADC: ☒ ADC Cal/PSU Ctrl
- WiFi Cal:**
 - ☐ WiFi Tx Dc Offset ☐ WiFi TXP ☐ WiFi RF Check
- GSM/EDGE Final Setting:**
 - ☐ GSM850 ☒ GSM900 ☒ DCS ☒ PCS ☐ GPRS Test
- System Setting:**
 - TEST MODE SELECT: Manual Initial
 - Bar Code Get Type When Calibration: Scan Barcode
 - Power Supply Type: Agilent 663xx
 - PSU GPIB Address: GPIB0::5::INSTR
 - GSM/EDGE Tester: Agilent 8960
 - CMU RF Port: RF1
 - WiFi Tester: IQVIEW
 - BT Tester: CMU200
 - Baseband Chip Type: AutoDetect
 - COM Port Select: COM 5
 - ☐ Cal INP LOSS ☐ Cal OUP LOSS
- File Selection:**
 - NVRAM Database file: d:\Work\flash.img\7338\EP3\KP220-00-V10a-404-XX-JAN-26-2008(R1Q)\BPLGUIInfoCustomSrcP_KP220-00-V10a-404-
 - Config File Location (CFG file): c:\Documents and Settings\游佳斌\My Documents\7338_EP3_ATE data\meta_7338_EP3_20071218.CFG
 - Calibration File Location (.ini file): c:\Documents and Settings\游佳斌\My Documents\7338_EP3_ATE data\MTKCAL_7338_EP3_20071218.ini
 - Test Setup File Location (Setup file): c:\Documents and Settings\游佳斌\My Documents\7338_EP3_ATE data\MTK_7338_SETUP_EP3_20071218.ini
 - Test Report Location: c:\Documents and Settings\游佳斌\My Documents\7338_EP3_ATE data\Test date
 - Report Database Location: c:\Program Files\MTK_atedemo\mtk_ate.xls

Setting your power supply type

This close-up shows the 'System Setting' section with the following details:

- TEST MODE SELECT: Manual Initial
- Bar Code Get Type When Calibration: Scan Barcode
- Power Supply Type: KEITHLEY230 (highlighted with a red circle)
- PSU GPIB Address: 7
- GSM/EDGE Tester: Agilent 8960
- CMU RF Port: RF2
- WiFi Tester: IQVIEW
- BT Tester: CMU200
- Baseband Chip Type: 6226
- COM Port Select: COM 6
- ☐ Cal INP LOSS ☐ Cal OUP LOSS

Choose your Power Supply Type

Setting your GSM/EDGE Tester

System Setting

TEST MODE SELECT

Manual Initial

Bar Code Get Type When Calibration

Scan Barcode

Power Supply Type

KEITHLEY230.

PSU GPIB Address

7

GSM/EDGE Tester

Agilent 8960

CMU RF Port

RF2

WiFi Tester

IQVIEW

BT Tester

CMU200

Baseband Chip Type

6226

COM Port Select

COM 6

☐ Cal INP LOSS

☐ Cal OUP LOSS

Choose your Tester

Choose your download com port

System Setting

TEST MODE SELECT

Manual Initial

Bar Code Get Type When Calibration

Scan Barcode

Power Supply Type

KEITHLEY230.

PSU GPIB Address

7

GSM/EDGE Tester

Agilent 8960

CMU RF Port

RF2

WiFi Tester

IQVIEW

BT Tester

CMU200

Baseband Chip Type

6226

COM Port Select

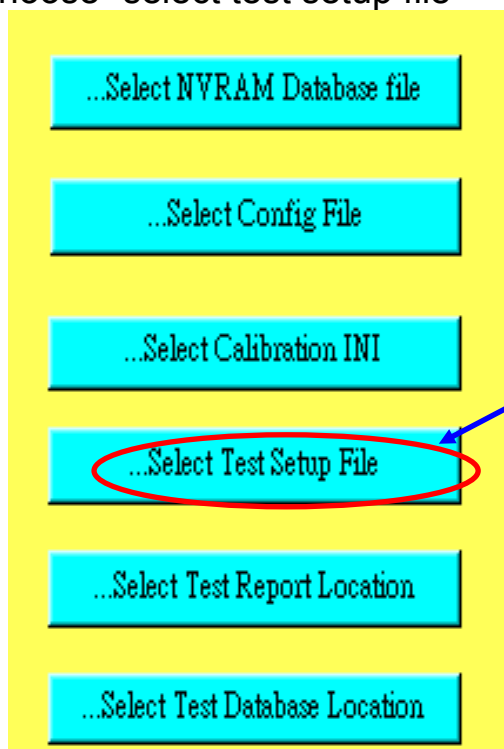
COM 6

☐ Cal INP LOSS

☐ Cal OUP LOSS

Choose your download cable connect COM port

Choose “select test setup file”



...Select NVRAM Database file

...Select Config File

...Select Calibration INI

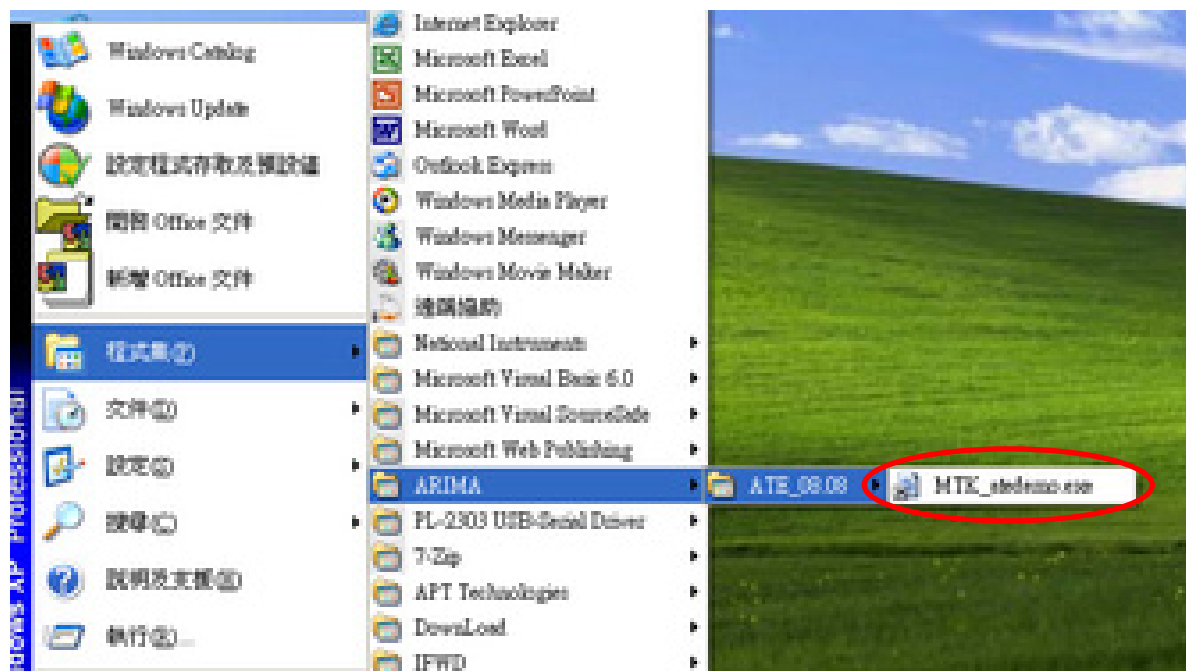
...Select Test Setup File

...Select Test Report Location

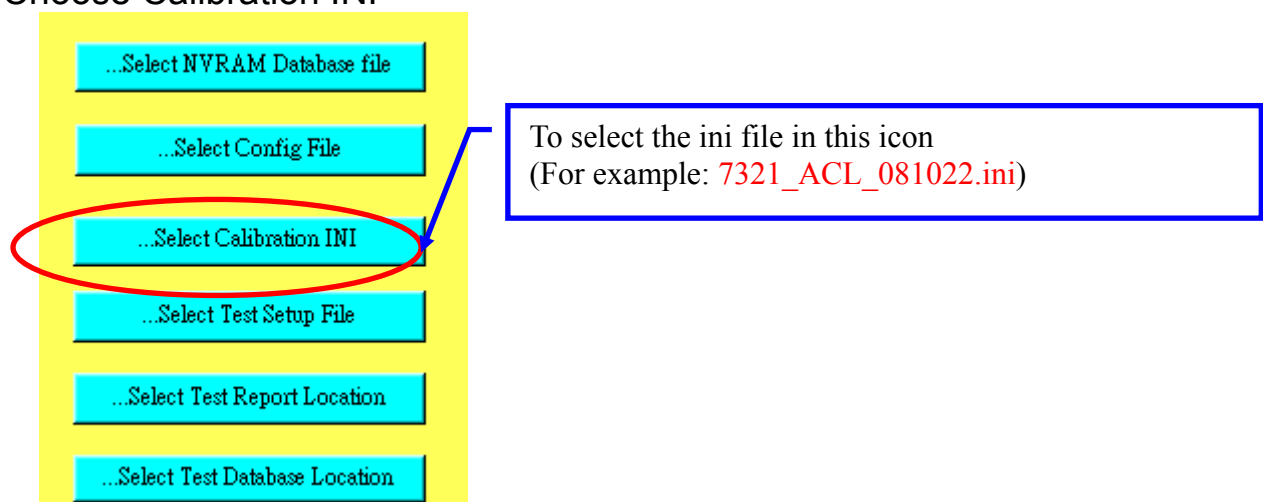
...Select Test Database Location

To select the setup file in this icon
(For example: 7321_SETUP_081022.ini)

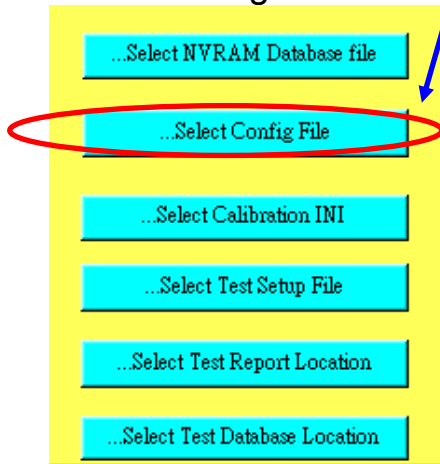
Execute MTK _ate demo again



Choose Calibration INI

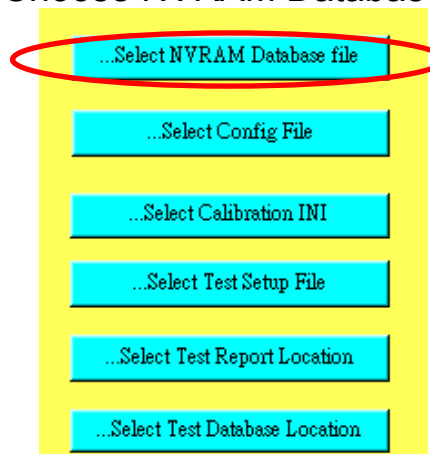


Choose Con fig File



To select the CFG file in this icon
(For example:
7321_MT6229+Sky77318_081022.CFG)

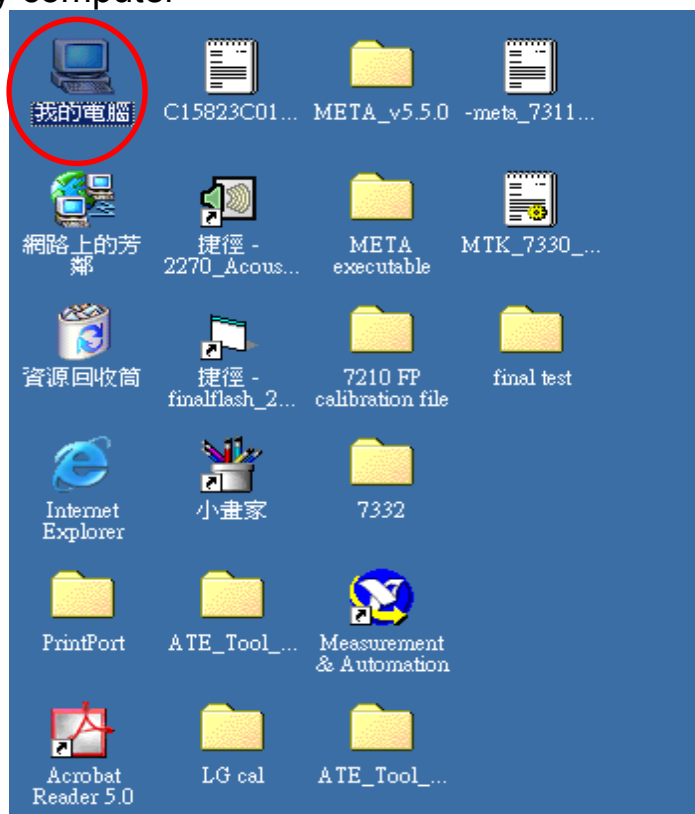
Choose NVRAM Database file



To select the SW database in this icon.

How to setup your test report location

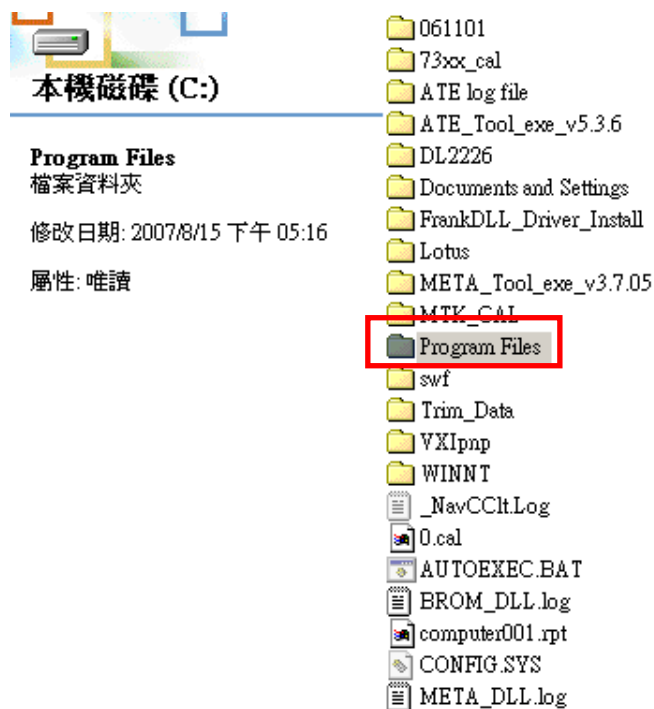
Choose my computer



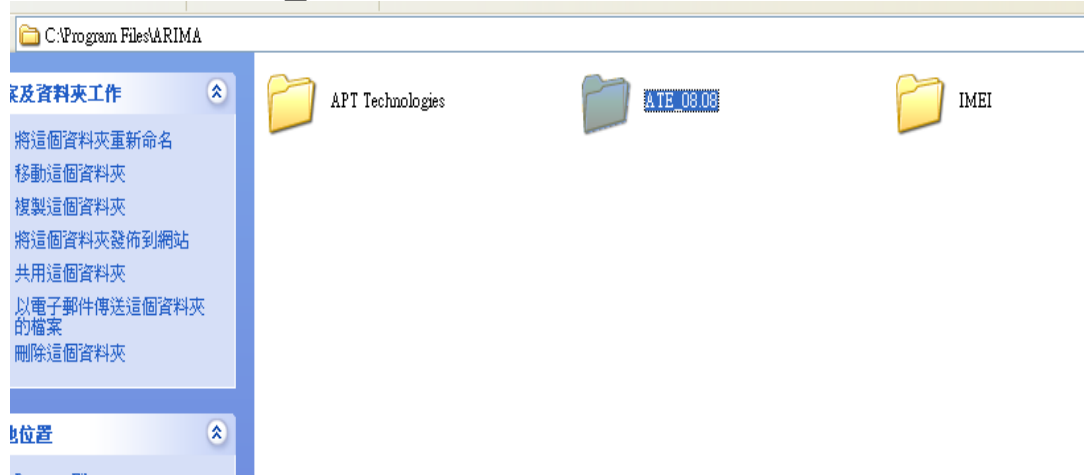
Choose "C" disk

名稱 ▲	類型	大小總計	可用空間
3.5 軟碟機 (A:)	3.5 吋軟式磁碟機		
本機磁碟 (C:)	本機磁碟	18.6 GB	15.6 GB
新增磁碟區 (D:)	本機磁碟	18.6 GB	16.0 GB
控制台	可用空間: 15.6 GB, 容量: 18.6 GB		

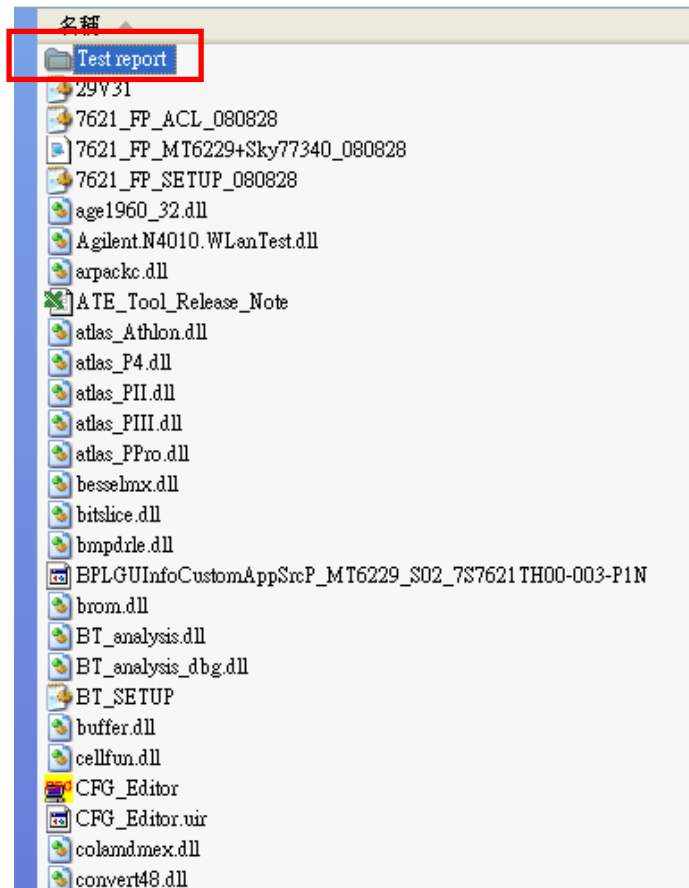
Choose “program files”



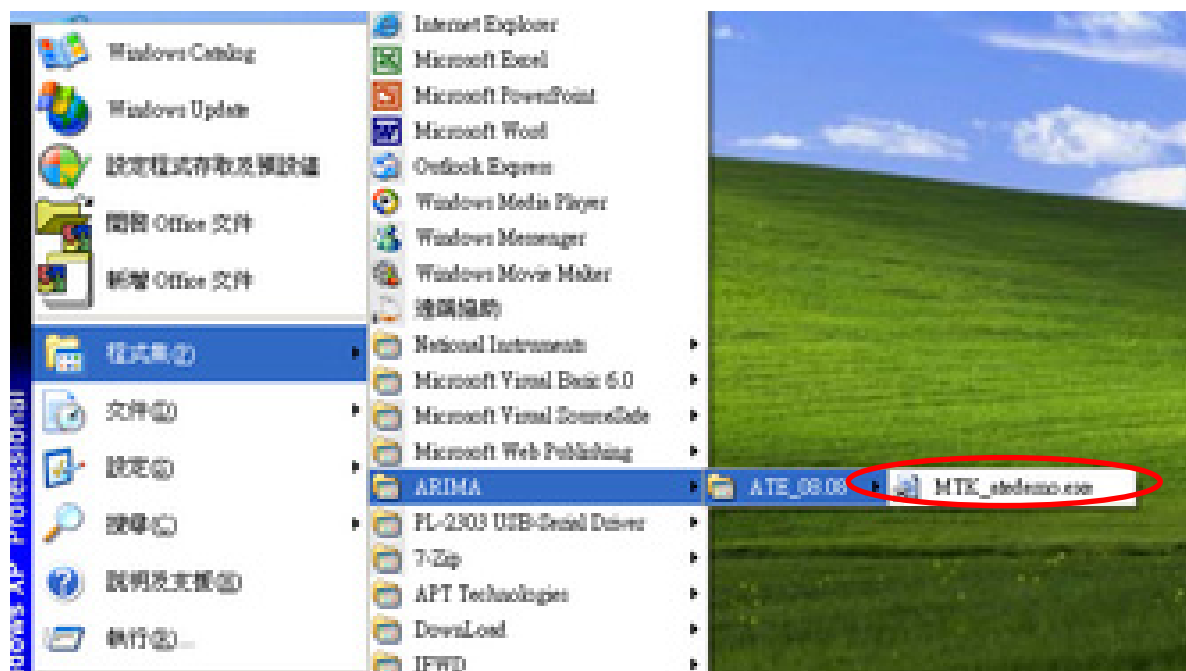
Choose “ARIMA\ATE_08.08” files



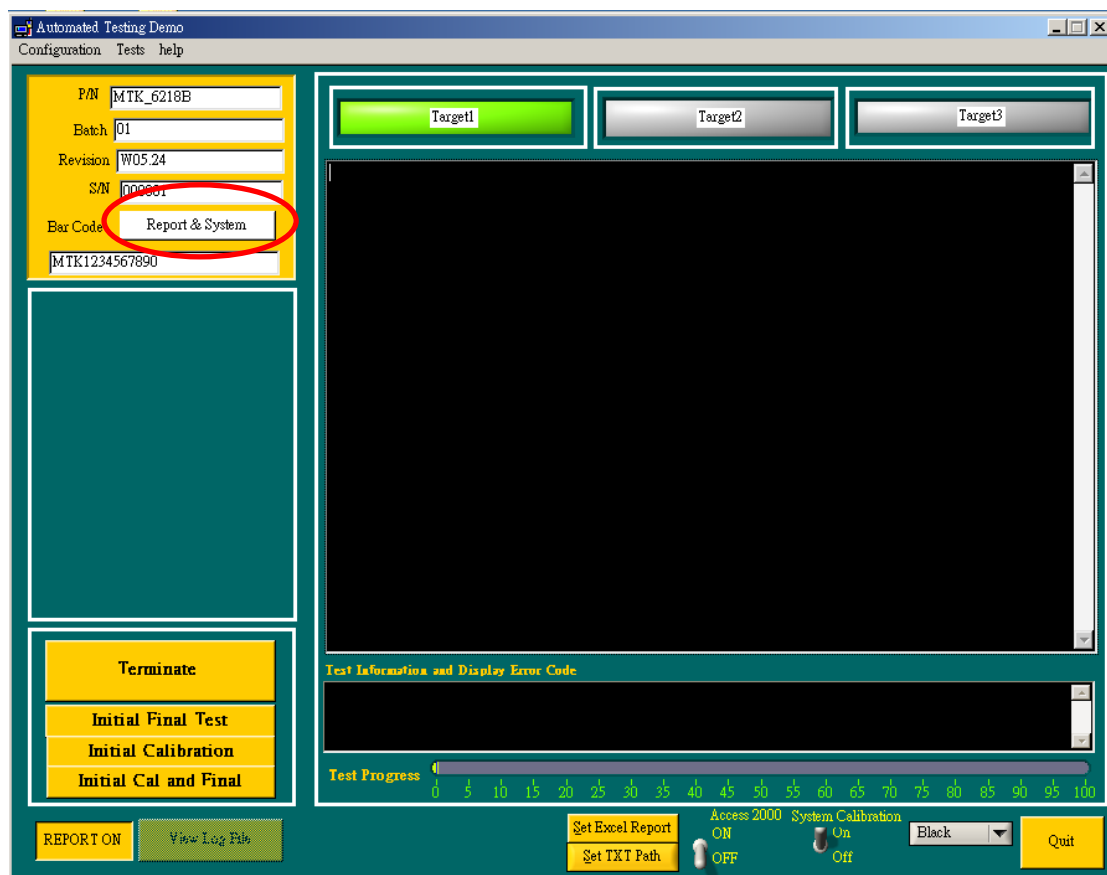
Setup new file and leave the window



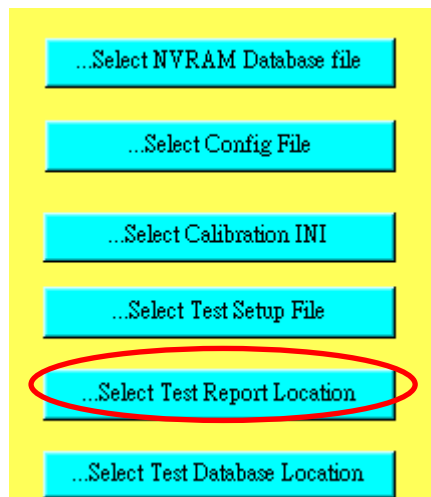
Execute MTK_ate demo



Press Report & System button



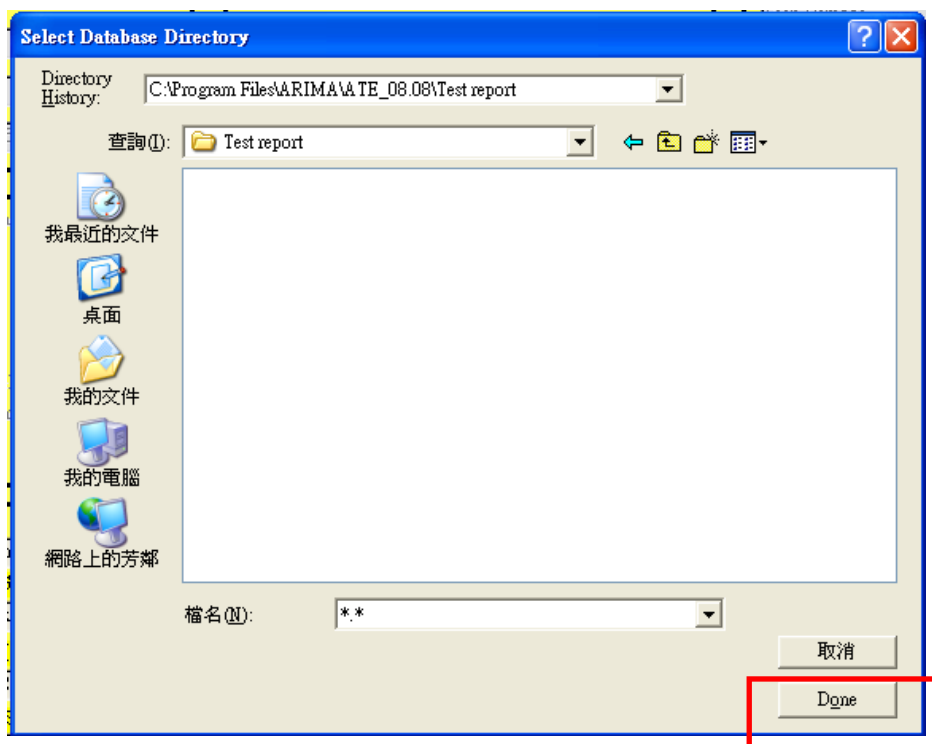
Press “select test report location”



Choose your setup report



Press “Done”



Setup finish

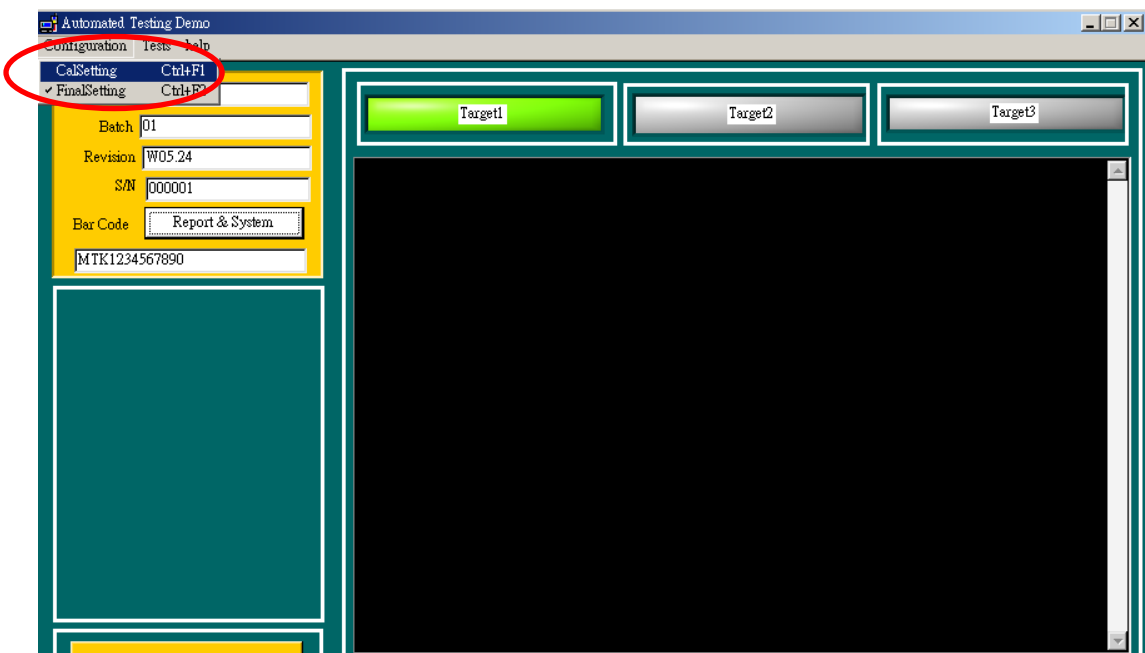
The screenshot shows the 'Unit Under Test' setup window with the following sections:

- Part Information:**
 - Part Number: MTK_6218B
 - Batch: 01
 - Revision: W05.24
 - Serial Number: 000001
 - Bar Code: zz999
- Test Options:**
 - ☒ Fast Power Measurement (CMU 3.50)
 - ☐ Wireless test
 - ☒ GSM Default Items
 - ☐ Stop Condition
 - ☐ Add Final Status
 - ☐ RF Final Test with Check Bar Code
 - ☐ Final Test with IMEI Write
 - ☐ Add Cal Status
- GSM/EDGE Cal Setting:**
 - Band:** ☐ GSM850 Cal ☒ GSM900 Cal ☒ DCS Cal ☒ PCS Cal
 - RX:** ☐ Phase Error (CMU) ☐ IP2 Cal
 - ☒ APC Cal ☒ PathLoss Calibration
 - TX GSM:** ☐ TXIQ ☒ SKY(77328) ☐ RFMD GSM ☐ Full PCL ☐ SKY EPSK(77316)
 - ☐ RENESAS ☒ APC Check ☐ Full PCL EPSK
 - Battery/ADC:** ☒ ADC Cal/PSU Ctrl
- WiFi Cal:**
 - ☐ WiFi Tx De Offset ☐ WiFi TXP ☐ WiFi RF Check
- GSM/EDGE Final Setting:**
 - ☐ GSM850 ☒ GSM900 ☒ DCS ☒ PCS ☐ GPRS Test
- System Setting:**
 - TEST MODE SELECT:** Manual Initial
 - Bar Code Get Type When Calibration:** Scan Barcode
 - Power Supply Type:** PSU GPIB Address: KEITHLEY2303/2
 - GSM/EDGE Tester:** Agilent 8960, CMU RF Port: RF2
 - WiFi Tester:** IQVIEW
 - BT Tester:** CMU200
 - Baseband Chip Type:** 6226, COM Port Select: COM 6
 - ☐ Cal INP LOSS ☐ Cal OUP LOSS
- File Selections:**
 - NVRAM Database file: c:\Program Files\MTK_demo\7332\BPLGUIInfoCustomSrcP_7873320000-001-R1B
 - Config File Location (CFG file): c:\Program Files\MTK_demo\7332\meta_7332_ep2_2_20070622.CFG
 - Calibration File Location (.ini file): c:\Documents and Settings\Administrator\COMPUTER001\桌面\7332\MTKCAL_7332_ep1_20070322.ini
 - Test Setup File Location (Setup file): c:\Documents and Settings\Administrator\COMPUTER001\桌面\7332\MTK_7332_SETUP_ep1_20070322.ini
 - Test Report Location: c:\Program Files\MTK_demo\test report
 - Report Database Location: c:\Program Files\MTK_demo\mtk_ate.xls
- Buttons:** Save Change

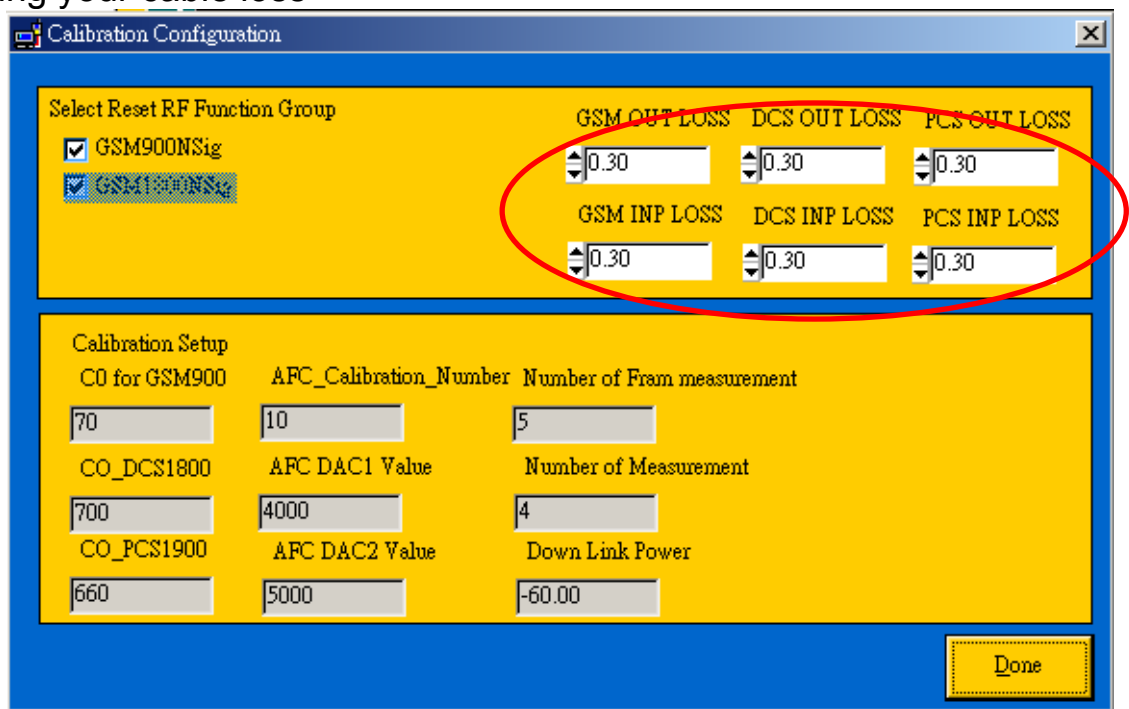
When you finish the setup then you press **save change** icon.

This screenshot shows the same setup window as above, but with the 'Save Change' button highlighted by a red circle. A dialog box titled 'ATE INFORMATION' is displayed in the center, containing the message: 'Setting change, Please restart program!' with an 'OK' button.

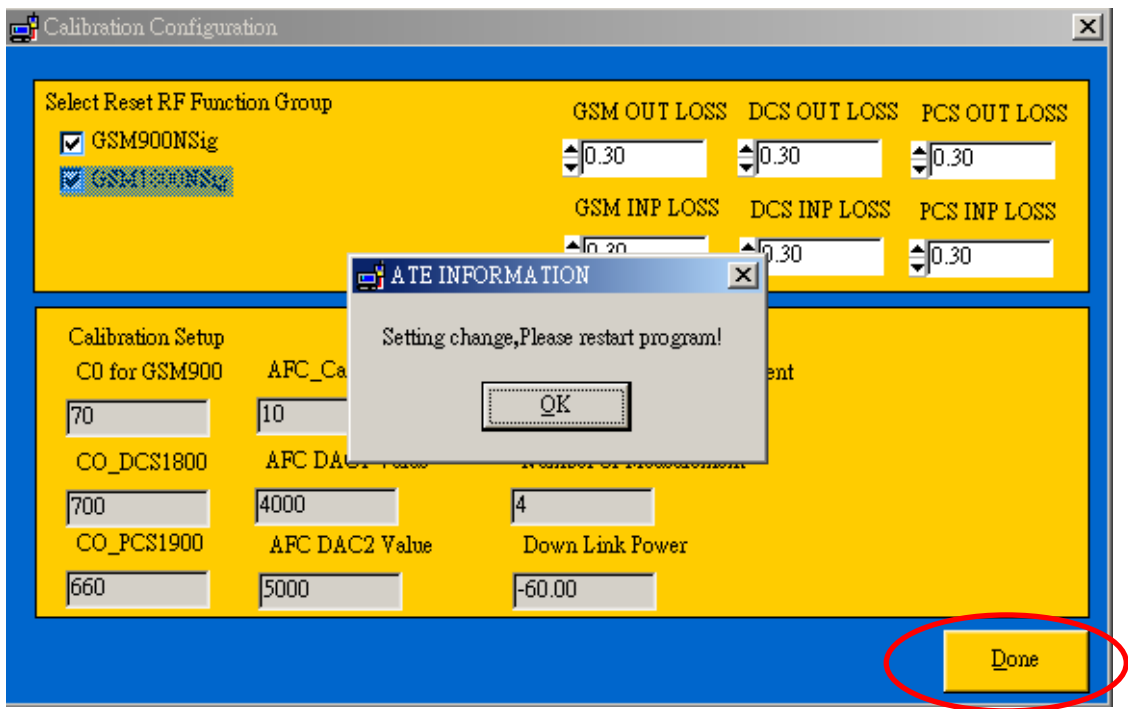
Press Configuration choose Cal Setting



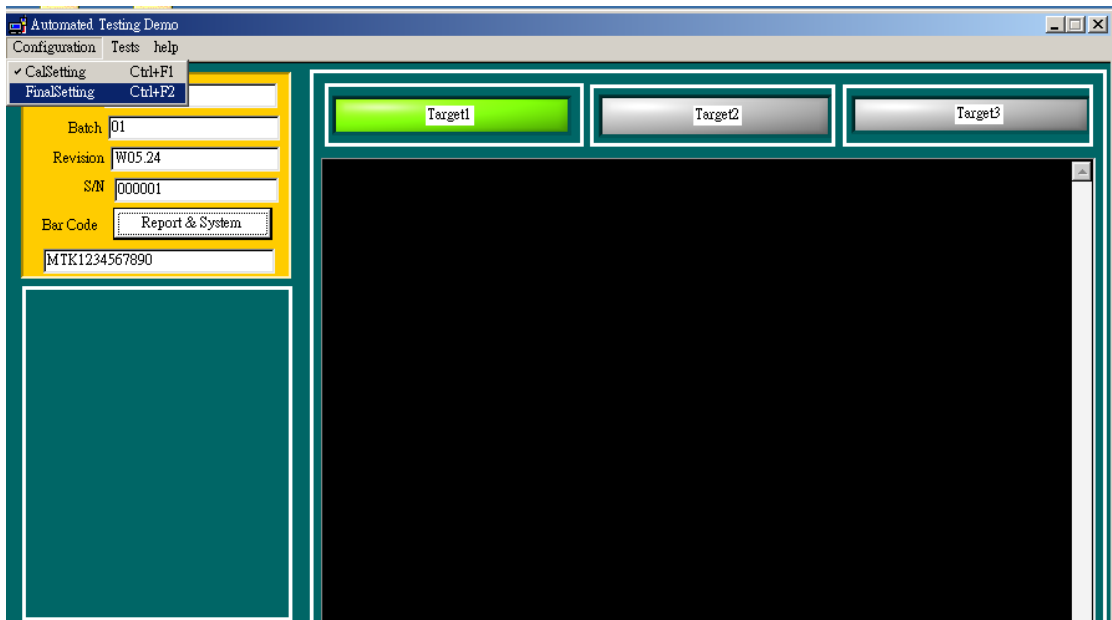
Setting your cable loss



Press Done to save



Press Configuration choose Final setting



Choose “MT Call” from Establish Call Type

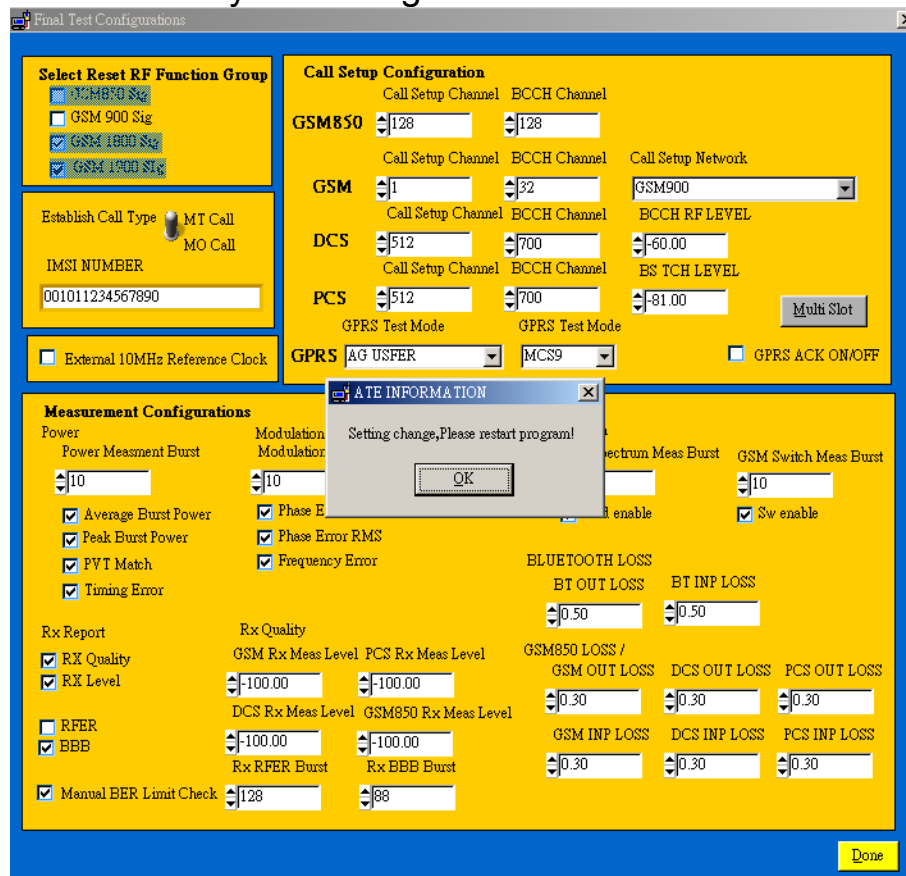
The screenshot shows the 'Call Setup Configuration' window. On the left, under 'Establish Call Type', the 'MT Call' radio button is selected and circled in red. The 'IMSI NUMBER' field contains '001011234567890'. The 'Select Reset RF Function Group' section on the far left has 'GSM850 Sig', 'GSM 900 Sig', 'GSM 1800 Sig', and 'GSM 1900 Sig' all checked. The main configuration area on the right includes settings for GSM850, GSM, DCS, PCS, and GPRS. The 'Call Setup Network' dropdown is set to 'GSM900'. The 'GPRS ACK ON/OFF' checkbox is unchecked.

Function Group	Call Setup Channel	BCCH Channel	Call Setup Network	BCCH RF LEVEL	BS TCH LEVEL
GSM850	128	128	GSM900	-60.00	-81.00
GSM	1	32			
DCS	512	700			
PCS	512	700			

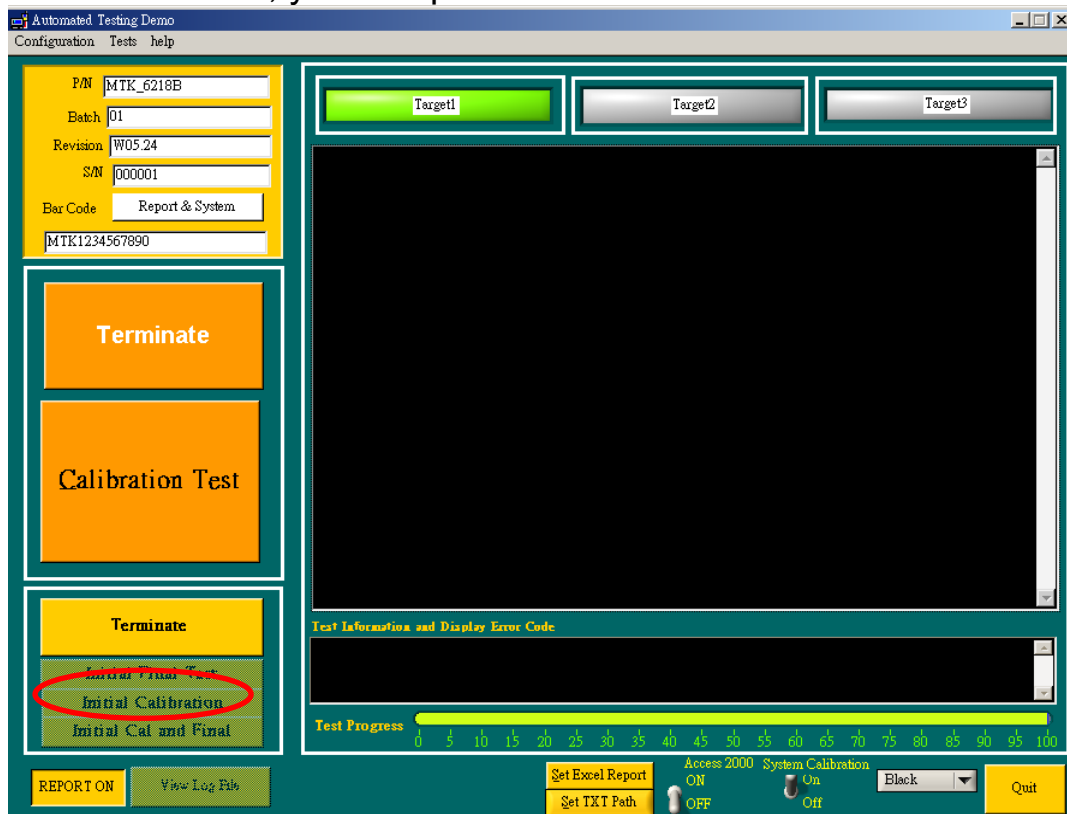
Key in your test SIM card number form IMSI NUMBER

This screenshot is identical to the one above, but the 'IMSI NUMBER' field, containing '001011234567890', is circled in red to indicate where the user should enter their test SIM card number.

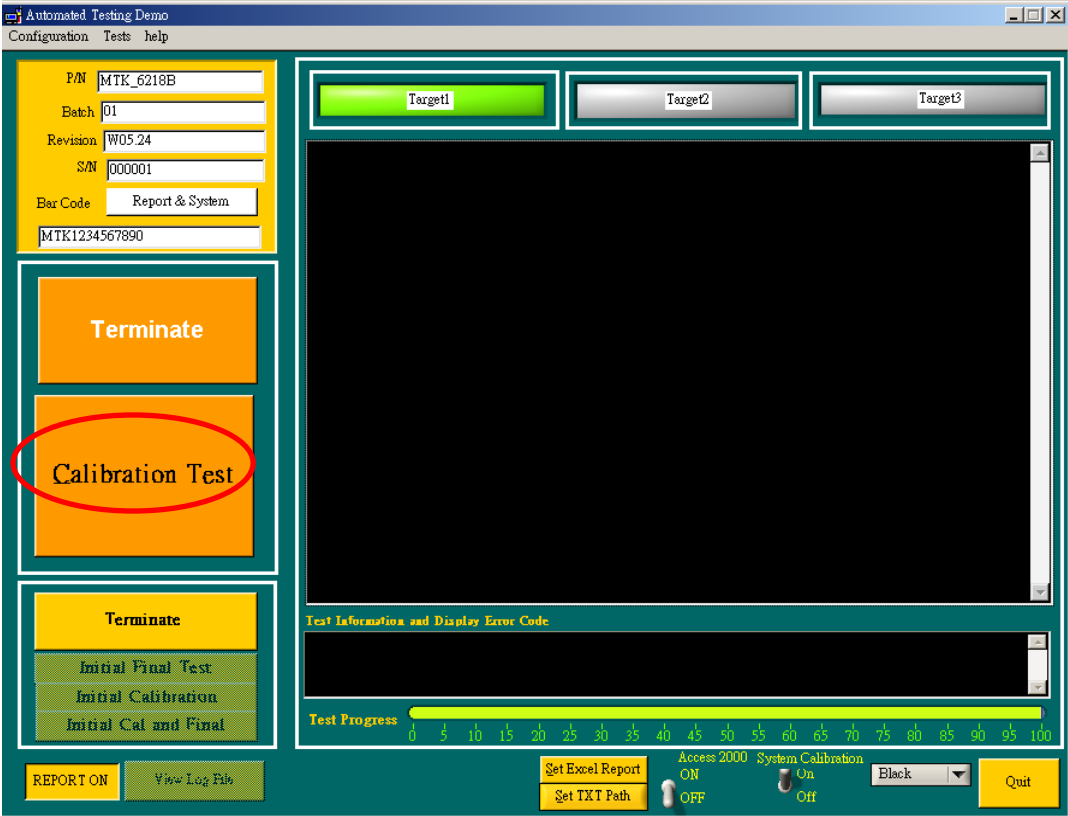
Press Done and save your setting



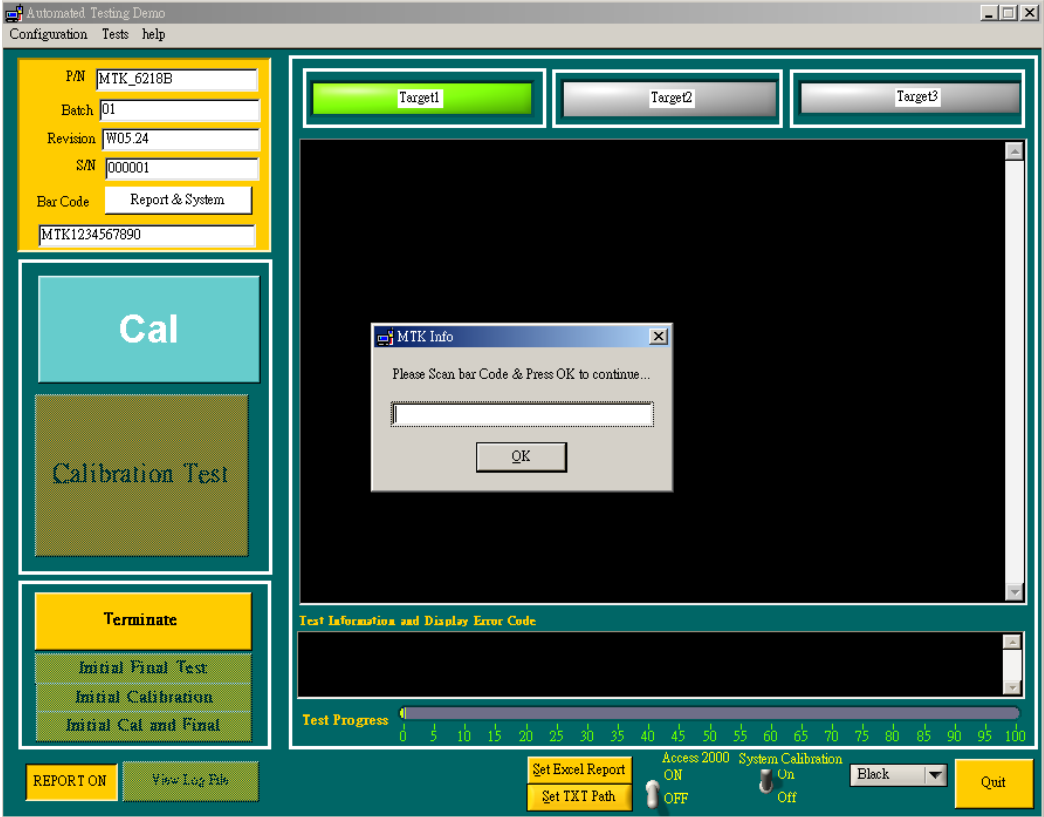
If you want calibration , you can press “initial calibration”



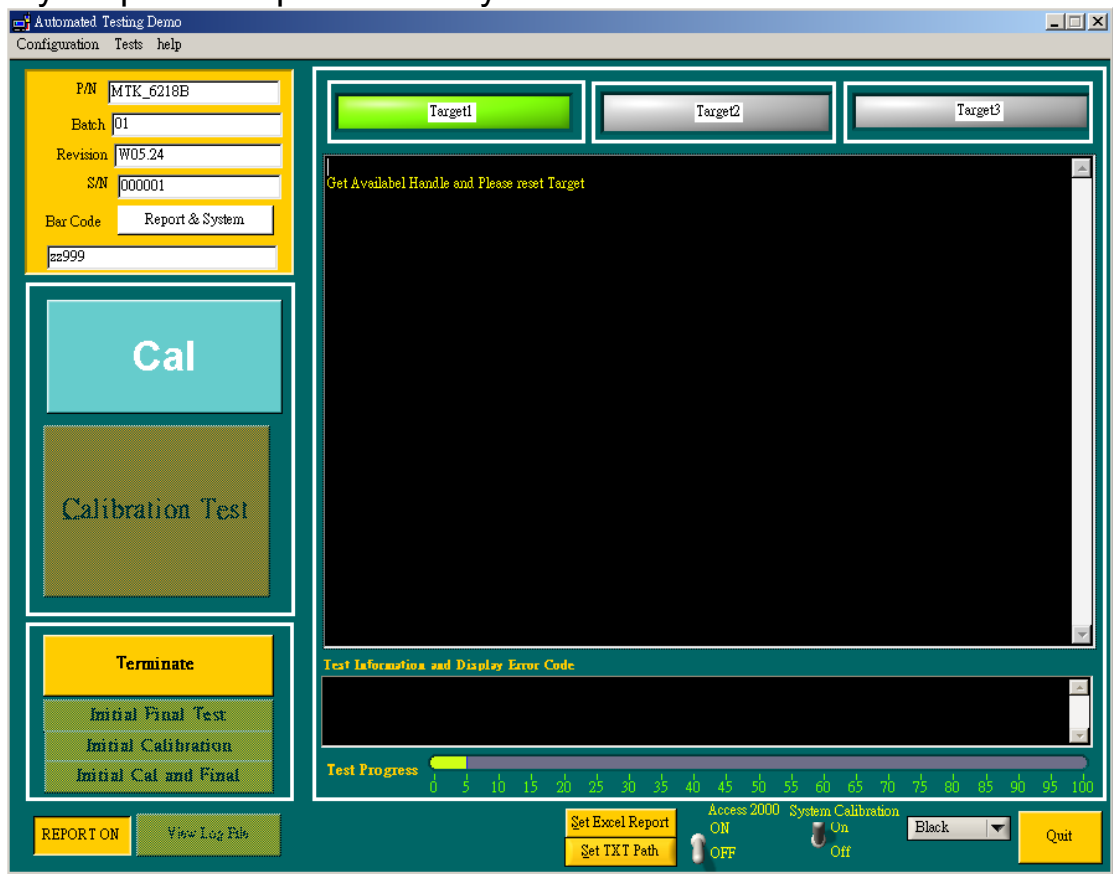
Press Calibration Test



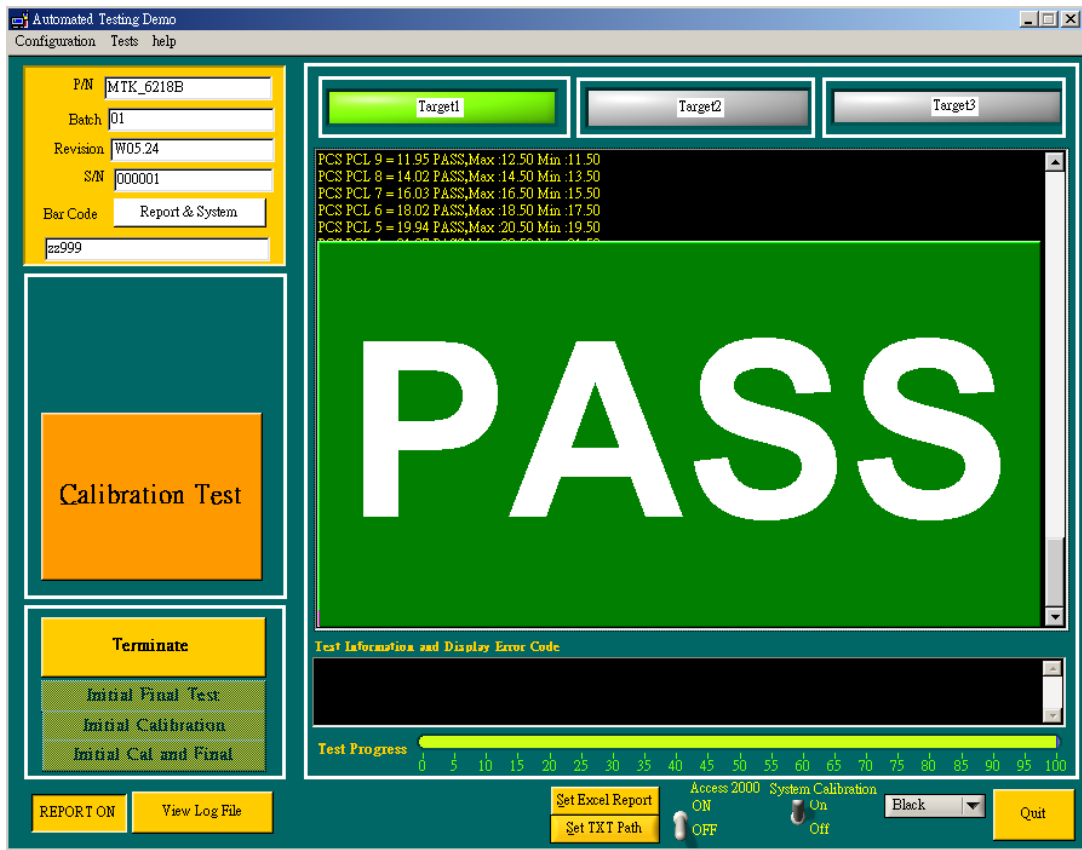
Key-in your phone bar Code



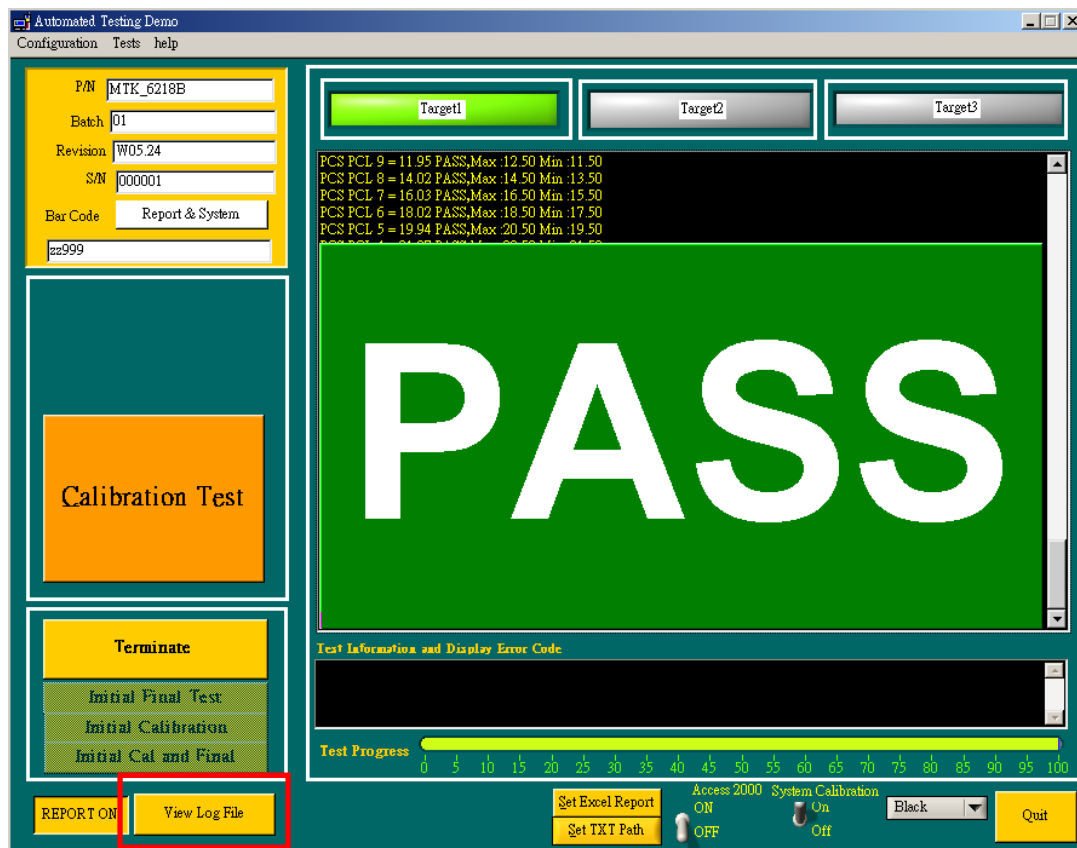
Press your phone of power on key and Start calibration



Calibration is ok and will show "PASS"



If you want see test report , you can press “View log file”



You can see the test report

```

-----
ATE Tool Version:5.0.3
Part Number: MTK_6218B
Serial Number: 000001
Revision: W05.24
Batch: 01
Bar Code: qqq
Error Code: 000
-----

```

```

==>Wait GSM Location Update .....
Enter into META Mode OK
AFC Calibration OK
Slope=2.824,min:1.000,max:10.000
Use Default Value=3836
AFC Calibration time=1.64(sec)
PL GSM TCH 15 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 30 = 1.00 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 45 = 0.88 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 60 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 75 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 80 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 100 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 124 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 975 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1000 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1023 = 1.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 550 = 0.50 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 590 = 1.00 Pass MAX:3.00 MIN:-3.00

```

If you want final test , you can press “initial final test “

Automated Testing Demo
Configuration Tests help

P/N: MTK_6218B
Batch: 01
Revision: W05.24
S/N: 000001
Bar Code: Report & System
MTK1234567890

Terminate
Initial Final Test
Initial Calibration
Initial Cal and Final

Target1 Target2 Target3

Test Information and Display Error Code

Test Progress 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

REPORT ON View Log File Set Excel Report Set TXT Path Access 2000 ON OFF System Calibration On Off Black Quit

Press "RF Final test"

Automated Testing Demo
Configuration Tests help

P/N: MTK_6218B
Batch: 01
Revision: W05.24
S/N: 000001
Bar Code: Report & System
MTK1234567890

Terminate

RF Final Test

Terminate

Initial Final Test
Initial Calibration
Initial Cal and Final

REPORT ON View Log File

Target1 Target2 Target3

==> Wait for Init RadioCommunication Tester,.....
==> Setting PCS1900 Ok.....
==> Setting GSM1800 Ok.....
==> Setting GSM900 Unit Ok.....
==> Enable System GSM900 Ok.....
==> Wait GSM Location Update
Initial Signalling Time = 5.0

Test Information and Display Error Code

Test Progress

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Set Excel Report
Set TXT Path

Access 2000 ON
System Calibration On

Black

Quit

1. Handset to insert SIM card
2. Key-in bar code or IMEI number
3. power on handset

Automated Testing Demo

Configuration Tests help

P/N: MTK_6218B

Batch: 01

Revision: W05.24

S/N: 000001

Bar Code: Report & System

MTK1234567890

TEST

RF Final Test

Terminate

Initial Final Test

Initial Calibration

Initial Cal and Final

Target1

Target2

Target3

==> Wait for Init RadioCommunication Tester,.....

==> Setting PCS1900 Ok.....

==> Setting GSM1800 Ok.....

==> Setting GSM900 Unit Ok.....

==> Enable System GSM900 Ok.....

==> Wait Initial Si

MTK Info

Switch ON the Mobile Phone & Press OK to continue...

OK

Test Information and Display Error Code

Test Progress

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

REPORT ON

View Log File

Set Excel Report

Set TXT Path

Access 2000 ON

System Calibration On

Black

Quit

ATE start final test

Automated Testing Demo
Configuration Tests help

P/N
Batch
Revision
S/N
Bar Code

Target1

Target2

Target3

TEST

RF Final Test

Terminate

Initial Final Test

Initial Calibration

Initial Cal and Final

GSM Band TCH 124, PCL 5

Avg. Burst Power (Avg.) [dBm] = 32.228660 Pass
Peak Burst Power [dBm] = 32.228660 Pass
Burst Power Matching = 0 Pass
Maximum phase error peak [deg] = 5.259489 Pass
Maximum phase error RMS [deg] = 2.343793 Pass
Maximum frequency error [Hz] = -20.146050 Pass
Timing Advance error = 0.000000 Pass
Rx Level = 29 Pass
Rx Quality = 0 Pass
Class II = 0.029904 Pass
Class Ib = 0.000000 Pass
Modulation +400kHz = -66.839870
Modulation -400kHz = -65.896740 PASS
Modulation +600kHz = -68.604150
Modulation -600kHz = -69.584160 PASS
Modulation +1.2MHz = -71.047200
Modulation -1.2MHz = -70.857630 PASS
Modulation +1.8MHz = -78.453870
Modulation -1.8MHz = -79.476660 PASS
Modulation = 0 Pass
Switching +400kHz = -31.559020
Switching -400kHz = -30.744700 PASS
Switching +1.8MHz = -43.066520
Switching -1.8MHz = -40.874710 PASS
Switching = 0 Pass

Test Information and Display Error Code

Test Progress
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

REPORT ON

View Log File

Set Excel Report

Set TXT Path

Access 2000 ON

System Calibration On

Black

Quit

If ATE test finish , ATE will show pass



If you want see the test report , you can press “View Log File”



You can see the test report

```
-----
ATE Tool Version:5.0.3
Part Number:  MTK_6218B
Serial Number:  000001
Revision:  W05.24
Batch:  01
Bar Code:  qqg
Error Code:  000
-----

==>Wait GSM Location Update .....
Enter into META Mode OK
AFC Calibration OK
Slope=2.824,min:1.000,max:10.000
Use Default Value=3836
AFC Calibration time=1.64(sec)
PL GSM TCH 15 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 30 = 1.00 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 45 = 0.88 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 60 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 75 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 80 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 100 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 124 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 975 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1000 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1023 = 1.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 550 = 0.50 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 590 = 1.00 Pass MAX:3.00 MIN:-3.00
```

If you want initial cal and final test , you can press “initial cal and final test”

Automated Testing Demo
Configuration Tests help

P/N MTK_6218B
Batch 01
Revision W05.24
S/N 000001
Bar Code Report & System
MTK1234567890

Target1 Target2 Target3

Test Information and Display Error Code

Test Progress 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

REPORT ON View Log File

Set Excel Report Set TXT Path Access 2000 ON OFF System Calibration On Off Black Quit

Press "Cal & Final"

Automated Testing Demo
Configuration Tests help

P/N MTK_6218B
Batch 01
Revision W05.24
SN 000001
Bar Code Report & System
MTK1234567890

Terminate

Cal & Final

Terminate

Initial Final Test
Initial Calibration
Initial Cal and Final

Target1 Target2 Target3

Test Information and Display Error Code

Test Progress 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

- 1.Handset to insert SIM card
- 2.Key-in bar code or IMEI number
- 3.Power on handset

Automated Testing Demo

Configuration Tests help

P/N

Batch

Revision

S/N

Bar Code

Cal

Cal & Final

Terminate

Initial Final Test

Initial Calibration

Initial Cal and Final

Target1

Target2

Target3

MTK Info

Please Scan bar Code & Press OK to continue...

OK

Test Information and Display Error Code

Test Progress

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Start calibration

Automated Testing Demo
Configuration Tests help

P/N

Batch

Revision

S/N

Bar Code

Cal

Cal & Final

Terminate

Target1

Target2

Target3

```

PL DCS TCH 710 = 0.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 740 = 0.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 770 = 0.25 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 810 = 0.50 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 850 = 0.38 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 885 = 0.50 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 550 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 590 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 620 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 650 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 680 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 710 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 740 = 1.50 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 770 = 1.38 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 810 = 1.62 Pass MAX:3.00 MIN:-3.00
Path Loss Calibration OK
Pathloss Calibration time=8.31(sec)
-----GSM900 APC Cal-----
delta s = 0
Cal APC Power:19.03
delta s = 0
Cal APC Power:32.24
-----DCS1800 APC Cal-----
delta s = 0
Cal APC Power:13.96
delta s = 0
Cal APC Power:29.20
-----PCS1900 APC Cal -----
  
```

Test Information and Display Error Code

Test Progress

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Calibration finish and power on handset again

Automated Testing Demo
Configuration Tests help

P/N: MTK_6218B
Batch: 01
Revision: W05.24
S/N: 000001
Bar Code: Report & System
999

TEST

Cal & Final

Terminate

Initial Final Test
Initial Calibration
Initial Cal and Final

REPORT ON View Log File

Set Excel Report
Set TXT Path

Access 2000 ON
System Calibration On
Black

Quit

Target1 Target2 Target3

```

Enter into META Mode OK
AFC Calibration OK
Slope=2.816,min:1.000,max:10.000
Use Default Value=3803
AFC Calibration time=1.67(sec)
PL GSM TCH 15 = 1.25 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 30 = 1.12 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 45 = 0.88 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 60 = 1.12 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 75 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 80 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 100 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 124 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 975 = 1.50 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1000 = 1.38 Pass MAX:3.00 MIN:-3.00
PL GSM TCH 1023 = 1.12 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 550 = 0.62 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 590 = 1.12 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 620 = 1.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 650 = 0.62 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 680 = 0.25 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 710 = 0.12 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 740 = 0.12 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 770 = 0.25 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 810 = 0.62 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 850 = 0.38 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 885 = 0.62 Pass MAX:3.00 MIN:-3.00
  
```

Test Information and Display Error Code

Test Progress 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Start final test

Automated Testing Demo
Configuration Tests help

P/N: MTK_6218B
Batch: 01
Revision: W05.24
S/N: 000001
Bar Code: Report & System
zz999

Cal

Cal & Final

Terminate

Initial Final Test
Initial Calibration
Initial Cal and Final

Target1 Target2 Target3

```

PL DCS TCH 710 = 0.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 740 = 0.00 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 770 = 0.25 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 810 = 0.50 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 850 = 0.38 Pass MAX:3.00 MIN:-3.00
PL DCS TCH 885 = 0.50 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 550 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 590 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 620 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 650 = 1.12 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 680 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 710 = 1.25 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 740 = 1.50 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 770 = 1.38 Pass MAX:3.00 MIN:-3.00
PL PCS TCH 810 = 1.62 Pass MAX:3.00 MIN:-3.00
Path Loss Calibration OK
Pathloss Calibration time=8.31(sec)
-----GSM900 APC Cal-----
delta s = 0
Cal APC Power:19.03
delta s = 0
Cal APC Power:32.24
-----DCS1800 APC Cal-----
delta s = 0
Cal APC Power:13.96
delta s = 0
Cal APC Power:29.20
-----PCS1900 APC Cal-----

```

Test Information and Display Error Code

Test Progress 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Finish “Cal & Final test”

The screenshot shows the 'Automated Testing Demo' software interface. The window title is 'Automated Testing Demo' with a menu bar containing 'Configuration', 'Tests', and 'help'. On the left, there is a sidebar with a yellow 'Cal & Final' button. Below it, a 'Terminate' button is followed by three buttons: 'Initial Final Test', 'Initial Calibration', and 'Initial Cal and Final'. At the bottom left, there are 'REPORT ON' and 'View Log File' buttons. The main area features three target buttons at the top: 'Target1' (green), 'Target2' (grey), and 'Target3' (grey). Below these, a large green box displays 'PASS' in white text. Above the 'PASS' box, test results are shown: 'PCS Band TCH 810, PCL 0', 'Avg. Burst Power (Avg.) [dBm] = 29.143900 Pass', and 'Peak Burst Power [dBm] = 29.143900 Pass'. Below the 'PASS' box is a 'Test Information and Display Error Code' section. At the bottom, a 'Test Progress' bar is at 100%. The bottom right contains buttons for 'Set Excel Report', 'Set TXT Path', 'Access 2000' (ON), 'System Calibration' (On), a 'Black' dropdown menu, and a 'Quit' button.

Automated Testing Demo
Configuration Tests help

P/N MTK_6218B
Batch 01
Revision W05.24
S/N 000001
Bar Code Report & System
qq88

Cal & Final

Terminate
Initial Final Test
Initial Calibration
Initial Cal and Final

REPORT ON View Log File

Target1 Target2 Target3

PCS Band TCH 810, PCL 0
Avg. Burst Power (Avg.) [dBm] = 29.143900 Pass
Peak Burst Power [dBm] = 29.143900 Pass

PASS

Test Information and Display Error Code

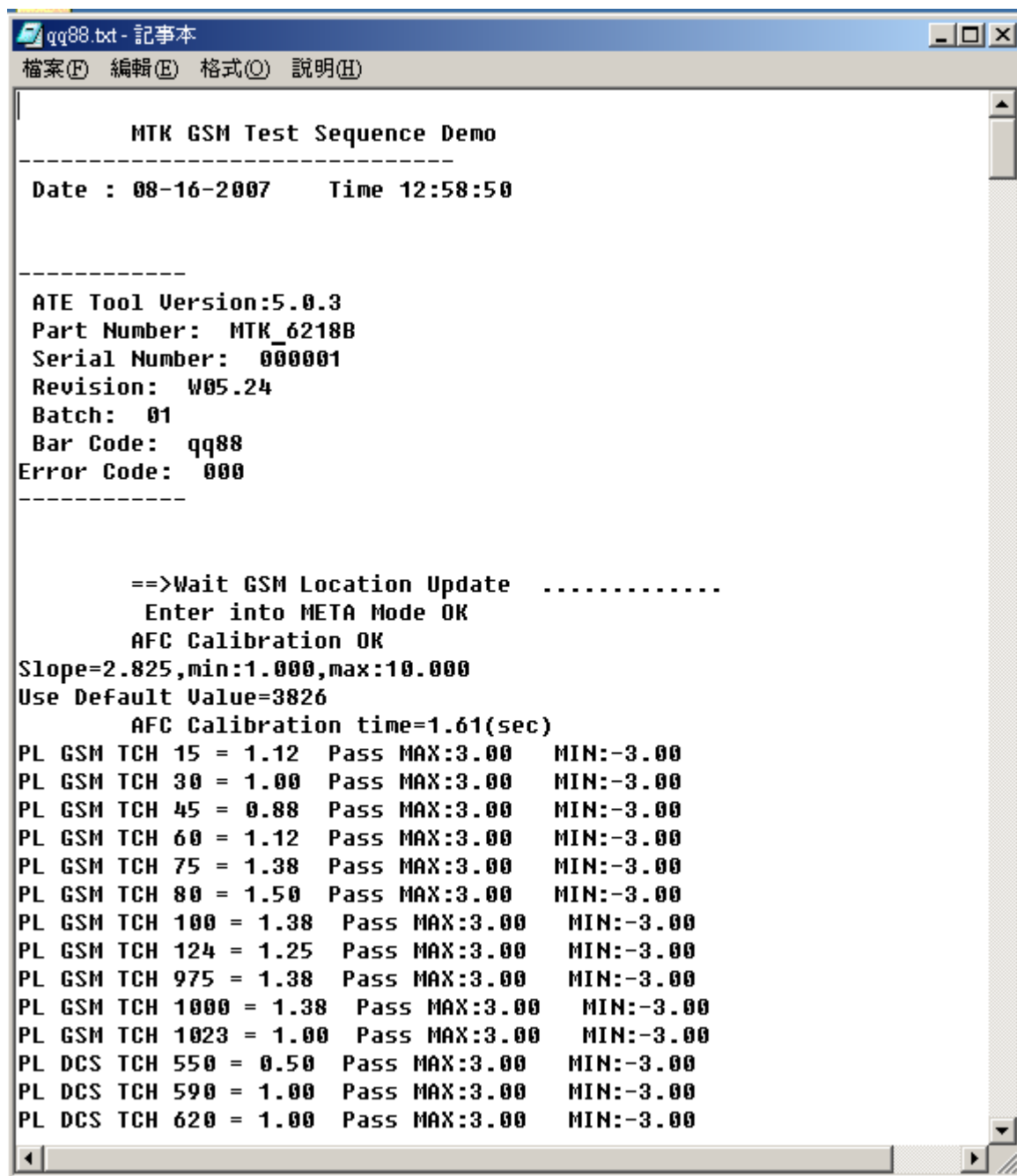
Test Progress 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

Set Excel Report Set TXT Path Access 2000 ON OFF System Calibration On Off Black Quit

If you want see the report, you can press “View Log File”



Ate show the test report



```
MTK GSM Test Sequence Demo
-----
Date : 08-16-2007    Time 12:58:50
-----
ATE Tool Version:5.0.3
Part Number:  MTK_6218B
Serial Number:  000001
Revision:  W05.24
Batch:  01
Bar Code:  qq88
Error Code:  000
-----

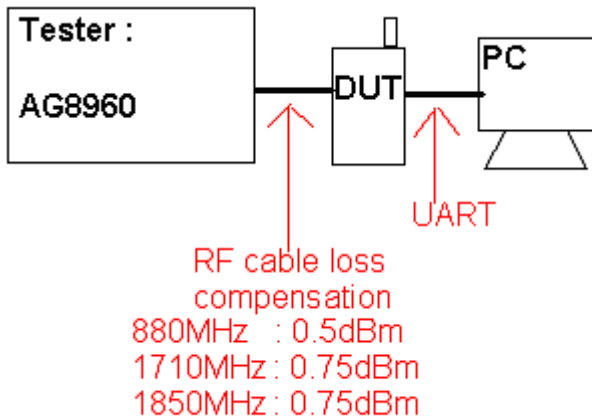
==>Wait GSM Location Update .....
Enter into META Mode OK
AFC Calibration OK
Slope=2.825,min:1.000,max:10.000
Use Default Value=3826
AFC Calibration time=1.61(sec)
PL GSM TCH 15 = 1.12  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 30 = 1.00  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 45 = 0.88  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 60 = 1.12  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 75 = 1.38  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 80 = 1.50  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 100 = 1.38  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 124 = 1.25  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 975 = 1.38  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 1000 = 1.38  Pass MAX:3.00  MIN:-3.00
PL GSM TCH 1023 = 1.00  Pass MAX:3.00  MIN:-3.00
PL DCS TCH 550 = 0.50  Pass MAX:3.00  MIN:-3.00
PL DCS TCH 590 = 1.00  Pass MAX:3.00  MIN:-3.00
PL DCS TCH 620 = 1.00  Pass MAX:3.00  MIN:-3.00
```

12. STAND ALONE TEST

LG5 RF TX & RX Test :

Test Configuration & Expected Outcome

Test Configuration :



Expected Outcome :

Tx power : 32.5 +/- 1.5 dBm for GSM900

Tx power : 29.5 +/- 1.5 dBm for DCS1800, PCS1900
RX : -85 +/- 4 dBm for GSM900, DCS1800, PCS1900

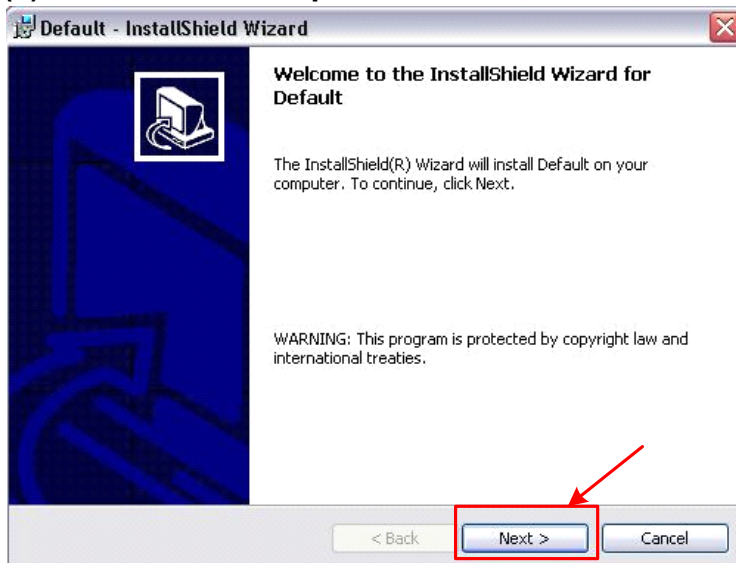
META Install & RF TX & RX Check

META Tool Install process :

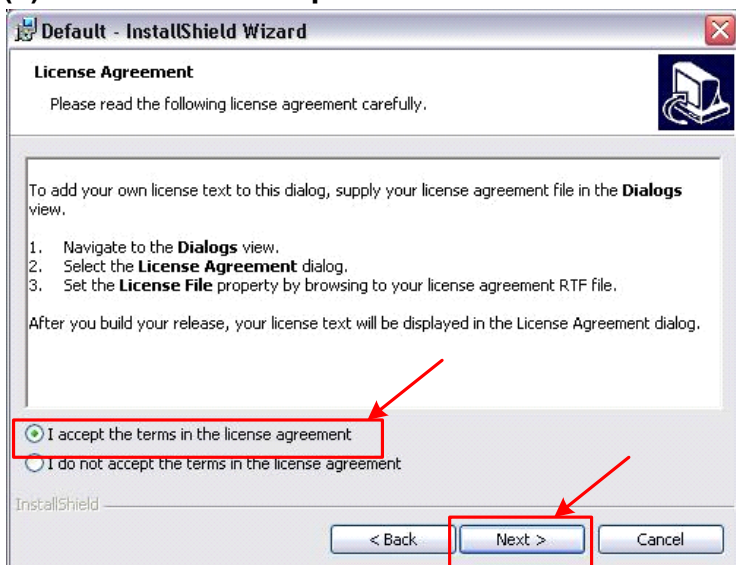
(1) Press “setup.exe” then press



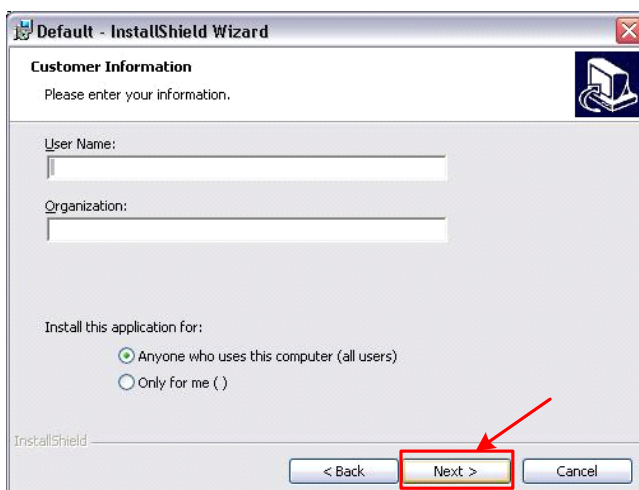
(2) Install Process – press “Next”



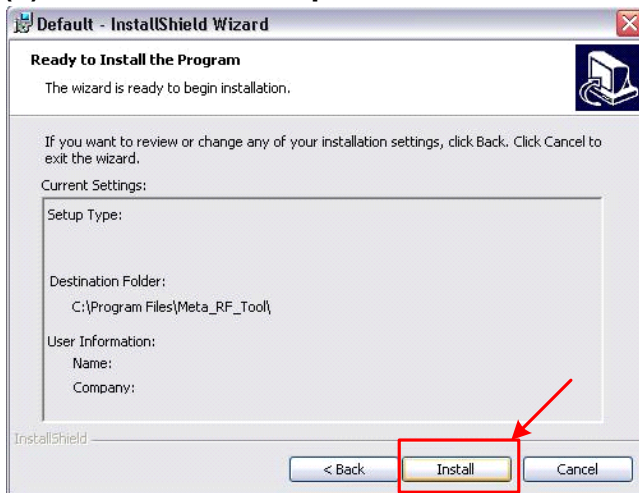
(3) Install Process – press “Next”



(4) Install Process – press “Next”



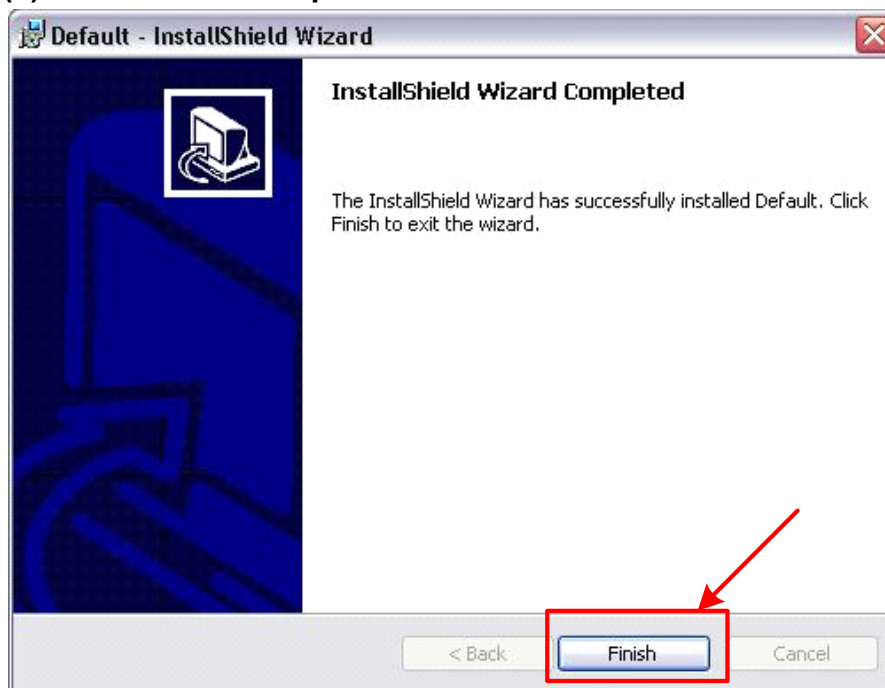
(5) Install Process – press “Next”



(6) Install Process



(7) Install Process – press “Finish”



RF RX Check :

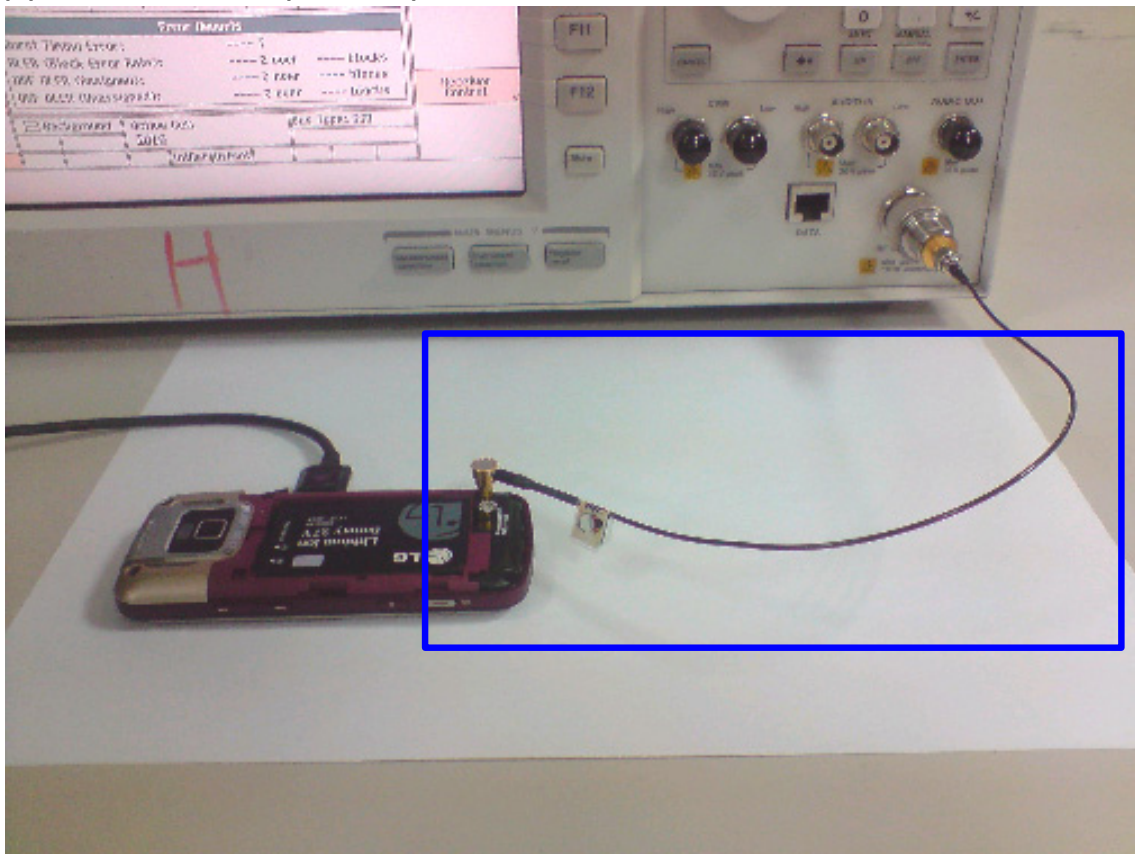
(1) Open “ Meta_RF_Tool ”



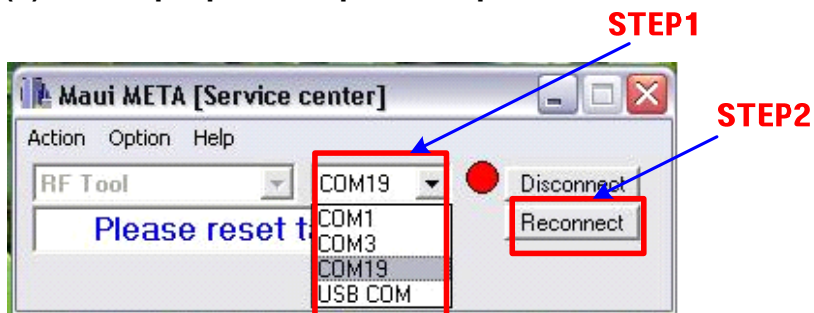
(2) Pull in UART cable



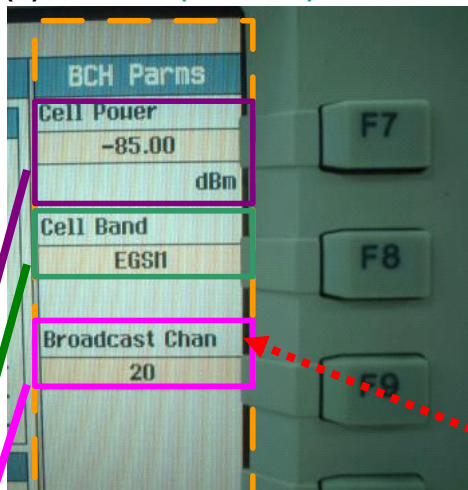
(3) Inset RF-Cable (AG8960)



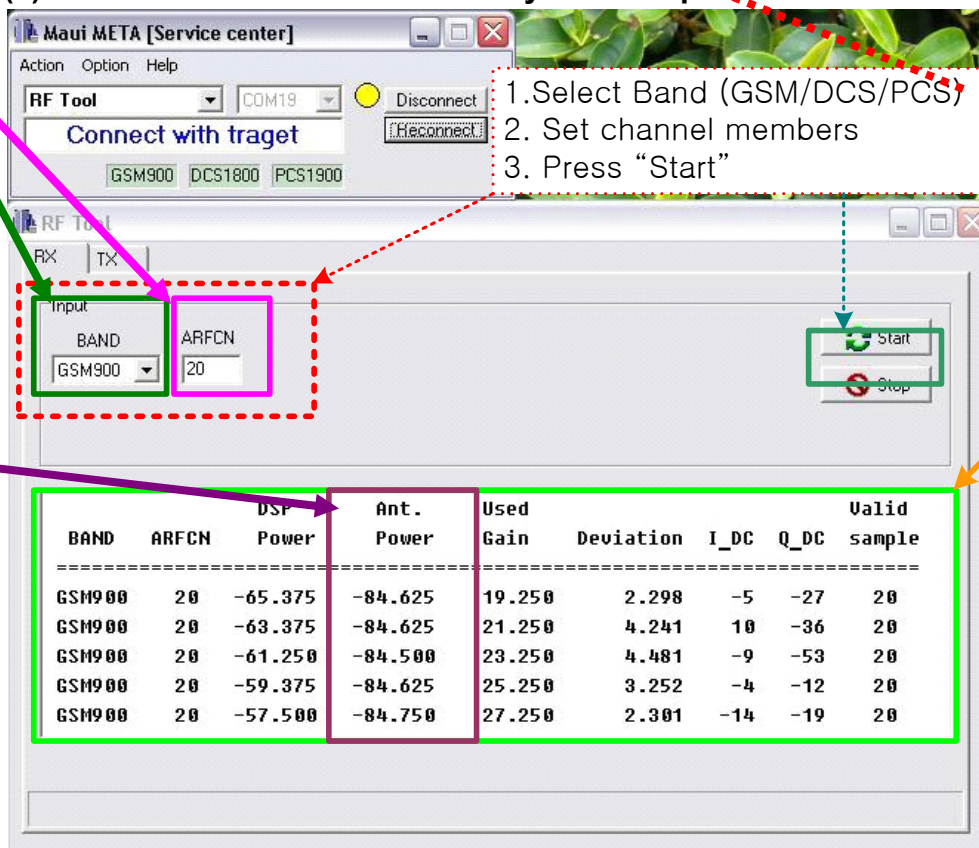
(4) Select proper com port and press “Reconnect” and then turn on the mobile phone



(5) **RX Test (AG8960)**--- Set “BCH Params” ,



(6) **RX Test** --- Press Start then Only check top 5 items



Check first 5 items,
need +/- 4 inside

RF TX Check :

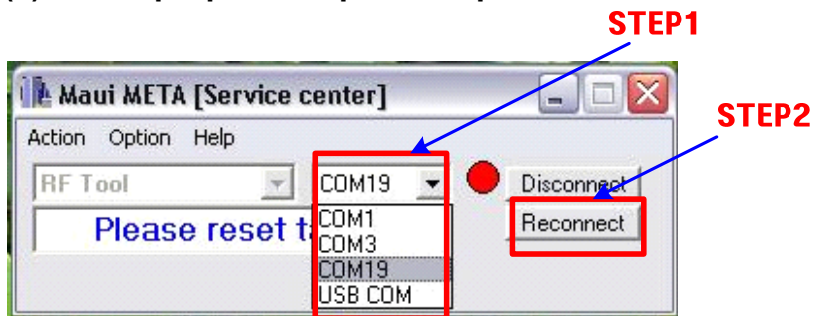
(1) Open “ Meta_RF_Tool ”



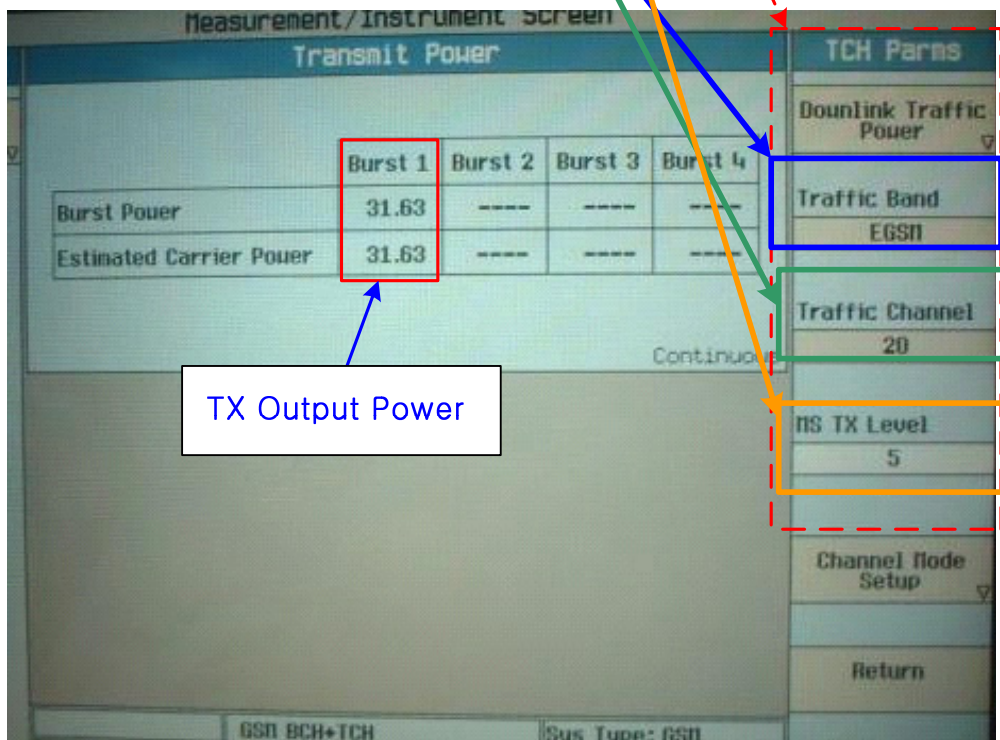
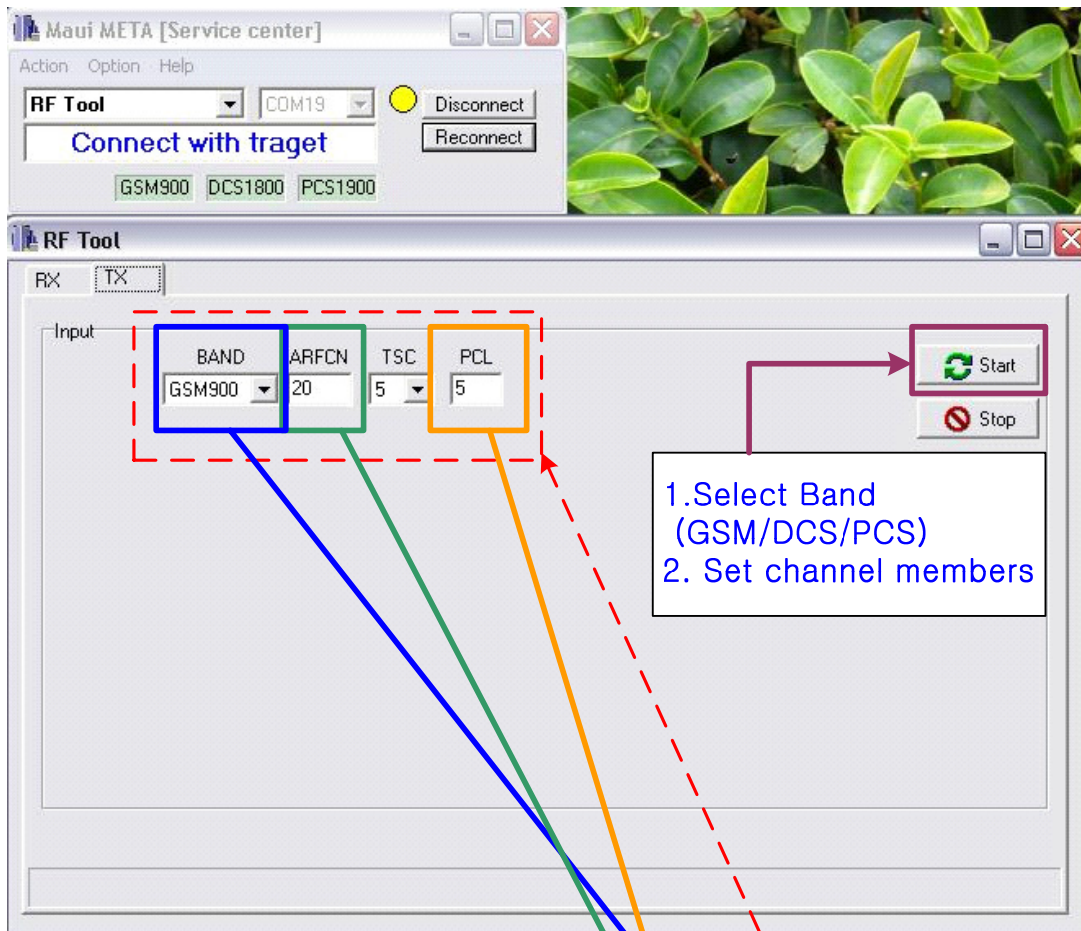
(2) Pull in UART cable

(3) Inset RF-Cable (AG8960)

(4) Select proper com port and press “Reconnect” and then turn on the mobile phone



(5) TX Test (AG8960) --- Need set "Band" , "Channel" & "Power Level"



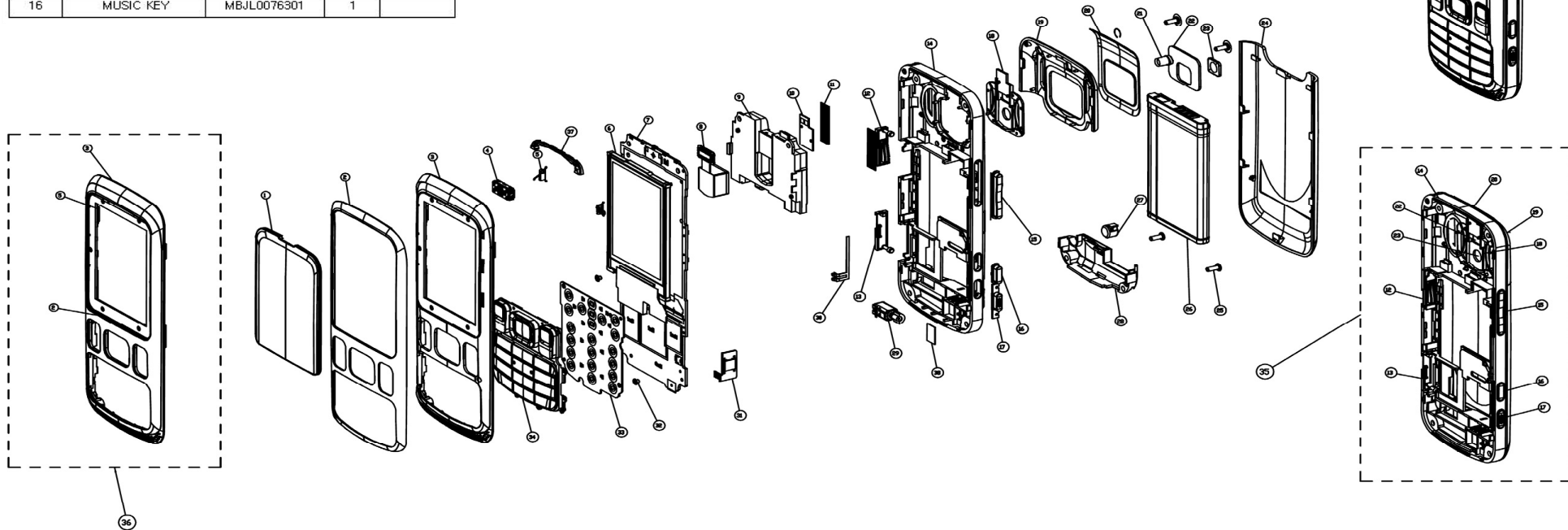
13. EXPLODED VIEW&REPLACEMENT PART LIST

13.1 KM330 Exploded view

ITEM	PART NAME	PART NUMBER	Q'ty	REMARK
1	MAIN LENS	AWAB0035801	1	
2	TOP DECORATION	MDAG0044701	1	
3	TOP COVER	MCJP0006201	1	
4	RECEIVER	SURY0014501	1	
5	EMI SPRING	MFCA0010201	2	
6	LCM	SVLM0033701	1	
7	MAIN PCBA	SAFF0236901	1	
8	CAMERA	SVCY0023001	1	
9	SPEAKER HOLDER	SUSY0028501	1	
10	FLASH LED BOARD	SADY0010301	1	
11	SPEAKER MESH	MPBN0071401	2	
12	ID DOOR	MCCE0048401	1	
13	SD DOOR	MCCG0018101	1	
14	FRAME	MCJN0101801	1	
15	VOL KEY	MBJL0076201	1	
16	MUSIC KEY	MBJL0076301	1	

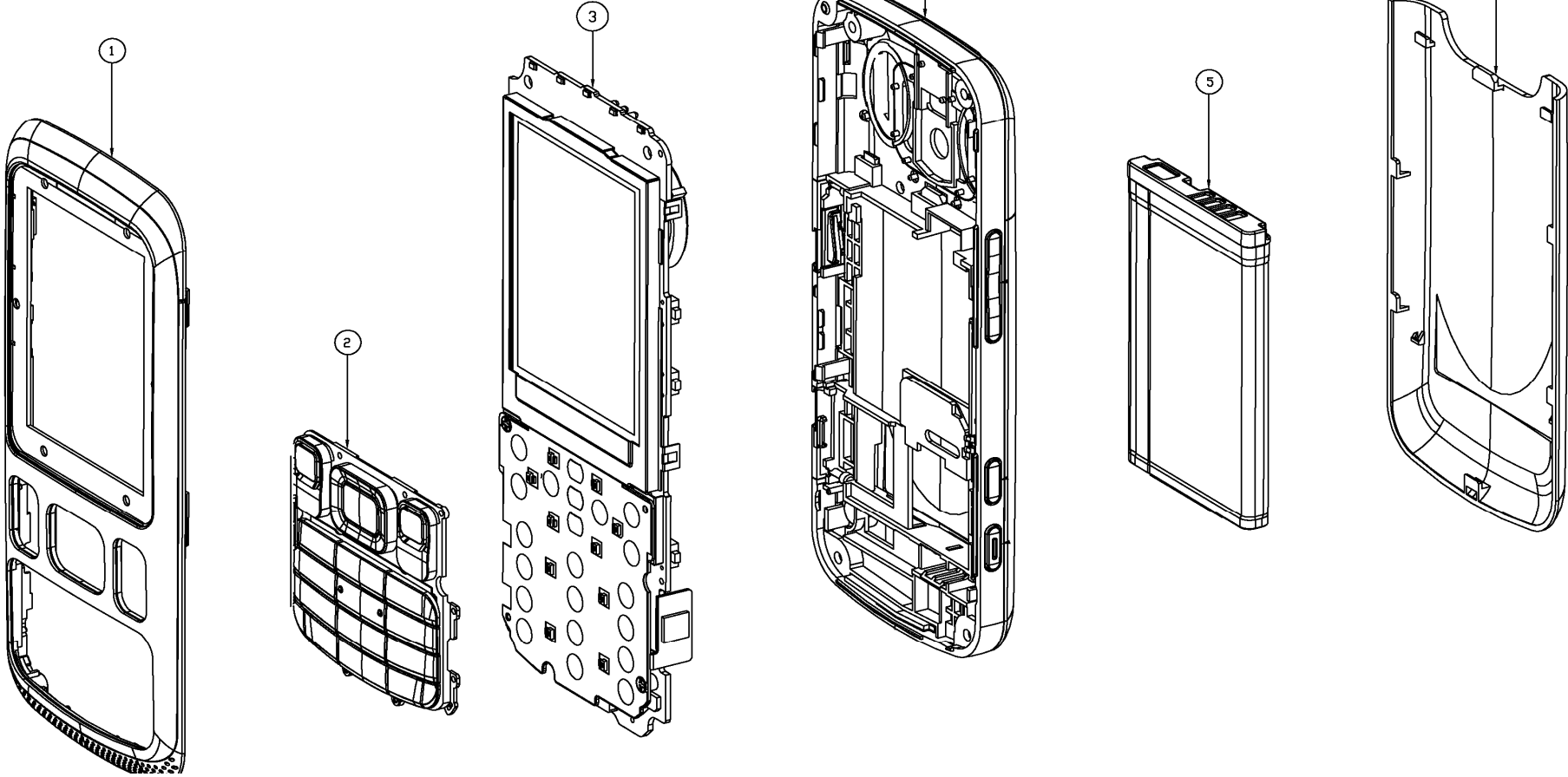
17	CAMERA KEY	MBJL0076401	1	
18	CAMERA RING	MDAD0046801	1	
19	BOTTOM COVER	MDAK0017401	1	
20	CAMERA COVER	MDAD0046901	1	
21	SCREW RUBBER	MCCH0017401	2	
22	FLASH LENS	MWAE0046501	1	
23	CAMERA LENS	MWAE0046601	1	
24	BATTERY COVER	MCJA0070701	1	
25	M1,6 SCREW	GMZZ0027701	1	
26	BATTERY	SBPL0089901	1	
27	ANTENNA RUBBER	MCCF0059201	1	
28	ANTENNA HOLDER	SNGF0047101	1	
29	VIBRATOR	SJMY0009301	1	

30	ANTENNA BLUETOOTH	SNGF0047201	1	
31	CAMERA KEY FPC	SACY0093701	1	
32	SCREW M1,4	GMZZ0028701	1	
33	KEYPAD PCBA	SAEY0068001	1	
34	KEY PAD	MKAG0014602	1	
35	Rear Cover subassy	MCJN0101801	1	
36	Front cover subassy	MCJK0105601	1	
37	LED rubber	MDAG0044701	1	
38	Mic sponge for rear	MPBH0048001	1	



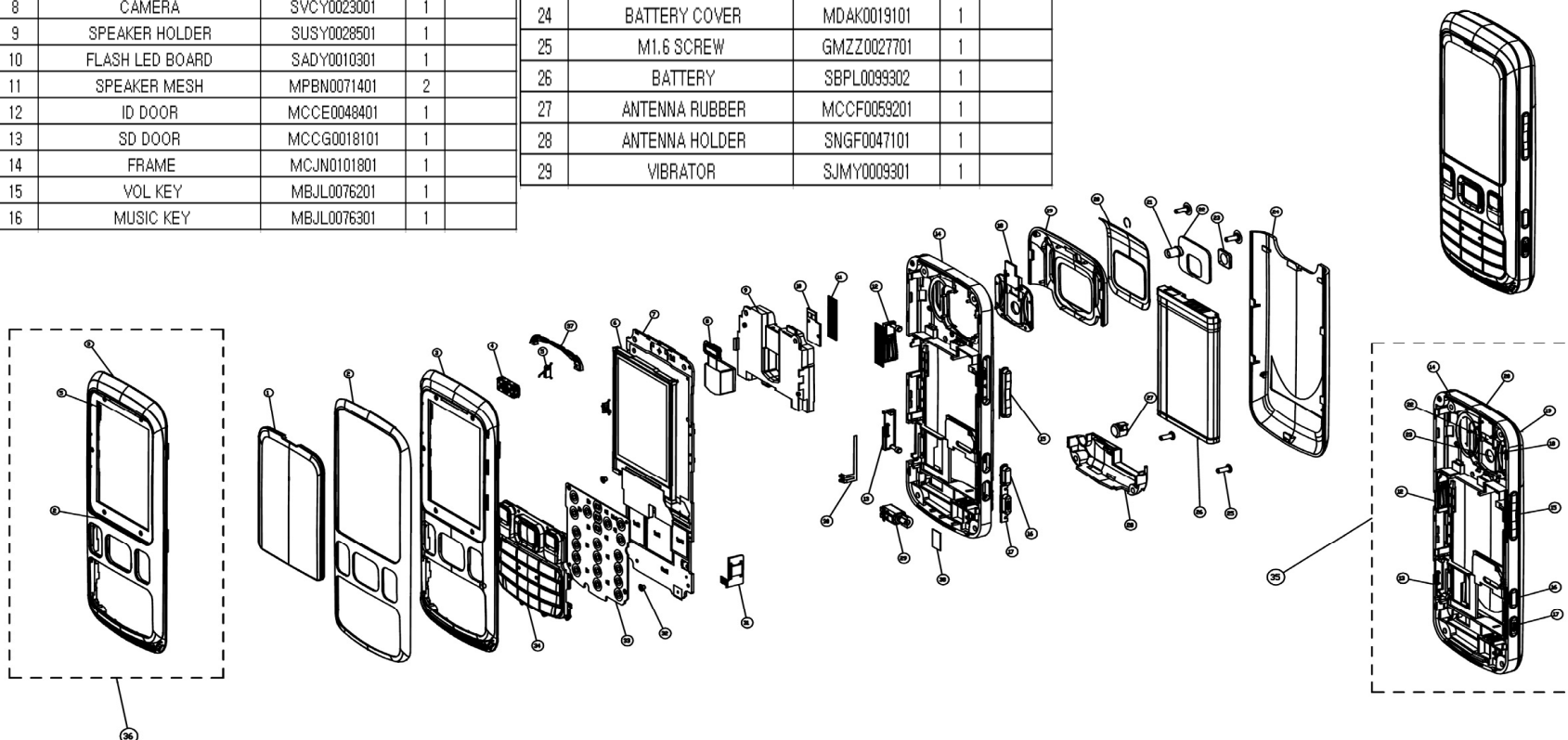
Ass'y exploded view

ITEM	PART NAME	PART NUMBER	Q'ty	REMARK
1	FRONT COVER SUB-ASSY	MCJK0105601	1	
2	KEY PAD	MKAG0014602	1	
3	MAIN PCBA	SAFF0236901	1	
4	REAR COVER SUB -ASSY	MCJN0101801	1	
5	BATTERY	SBPL0089901	1	
6	BATTERY COVER	MCJA0070701	1	



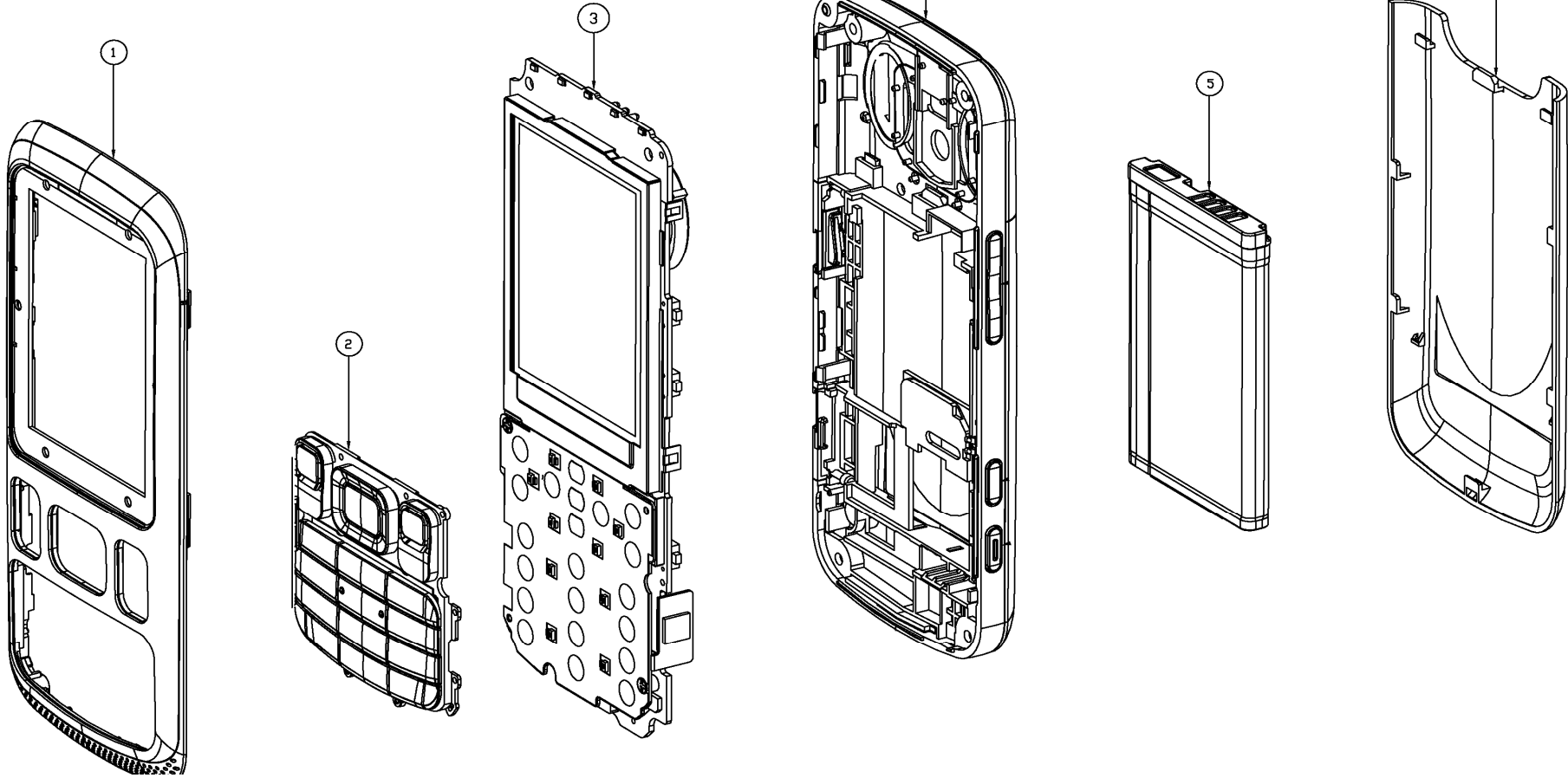
13.2 KM335 Exploded view

ITEM	PART NAME	PART NUMBER	Q'ty	REMARK	17	CAMERA KEY	MBJL0076401	1		30	ANTENNA BLUETOOTH	SNGF0047201	1	
1	MAIN LENS	AWAB0035801	1		18	CAMERA RING	MDAD0046801	1		31	CAMERA KEY FPC	SACY0093701	1	
2	TOP DECORATION	MDAG0044701	1		19	BOTTOM COVER	MDAK0019101	1		32	SCREW M1.4	GMZZ0028701	1	
3	TOP COVER	MCJP0006201	1		20	CAMERA COVER	MDAD0046901	1		33	Keypad pcba	SAEY0068001	1	
4	RECEIVER	SURY0014501	1		21	SCREW RUBBER	MCCH0017401	2		34	KEY PAD	MKAG0014602	1	
5	EMI SPRING	MFCA0010201	2		22	FLASH LENS	MWAE0046501	1		35	Rear Cover subassy	MCJN0103401	1	
6	LCM	SVLM0033701	1		23	CAMERA LENS	MWAE0046601	1		36	Front cover subassy	MCJK0105601	1	
7	MAIN PCBA	SAFF0236901	1		24	BATTERY COVER	MDAK0019101	1		37	LED rubber	MDAG0044701	1	
8	CAMERA	SVCY0023001	1		25	M1.6 SCREW	GMZZ0027701	1		38	Mic sponge for rear	MPBH0048001	1	
9	SPEAKER HOLDER	SUSY0028501	1		26	BATTERY	SBPL0099302	1						
10	FLASH LED BOARD	SADY0010301	1		27	ANTENNA RUBBER	MCCF0059201	1						
11	SPEAKER MESH	MPBN0071401	2		28	ANTENNA HOLDER	SNGF0047101	1						
12	ID DOOR	MCCE0048401	1		29	VIBRATOR	SJMY0009301	1						
13	SD DOOR	MCCG0018101	1											
14	FRAME	MCJN0101801	1											
15	VOL KEY	MBJL0076201	1											
16	MUSIC KEY	MBJL0076301	1											



Ass'y exploded view

ITEM	PART NAME	PART NUMBER	Q'ty	REMARK
1	FRONT COVER SUB-ASSY	MCJK0105601	1	
2	KEY PAD	MKAG0014603	1	
3	MAIN PCBA	SAFF0240601	1	
4	REAR COVER SUB -ASSY	MCJN0103401	1	
5	BATTERY	SBPL0099302	1	
6	BATTERY COVER	MCCH0150201	1	



13.3 KM330 Replacement part list

LGE Part Number	Arima Part Number	location	Description
EUSY0361701	311-0000-00503	U301	I.C BLUETOOTH MODULE_MT6601T/BO-L_TFBGA_70BALLS_NoMemory_MTK_N/A
EUSY0361601	311-0000-00020	U401	I.C BASE BAND PROCESSOR_MT6229AT/AC-L_TFBGA_314 balls_NoMemory_MTK_N/A
EUSY0387101	311-0000-00502	U501	I.C STACKED MEMORY_HYC0UGE0MF1P-5SH0E_FBGA_149 BALL_256M+1.0G_HYNIX_SDRAM + NAND FLASH
EUSY0387201	311-0000-00530	U1302	I.C FM MODULE_Si4702-C19-GM_QFN_20 pin_NoMemory_SILICON LABS_FM STEREO
EUSY0361901	311-0000-00021	U601	I.C POWER MANAGEMENT UNIT(PMU)_MT6318A/DY-L_TFBGA_96 Balls_NoMemory_MTK_N/A
SFAY0011201	311-0000-00051	U101	I.C POWER AMP MODULE(RF)_SKY77318-12_MCM_20 Pins_NoMemory_SKYWORKS_N/A
EUSY0362001	311-0000-00047	U102	I.C ANALOG SWITCH_ESHS-B085TB_LGA_12 Pins_NoMemory_HITACHI_Antenna switch for triple band
EQBA0005401	311-0000-00049	U201	I.C TRANSCEIVER_MT6139BN/FR-L_QFN_40 Pins_NoMemory_MTK_N/A
SFSY0037901	326-0000-00004	U103	Filter SAW_B39941-B9401-K610_942.5 MHZ_EPCOS_GSM-RX -50/150 ohm-SMD 5 pin
SFSY0038001	326-0000-00006	U104	Filter SAW_B39182-B9402-K610_1842.5 MHZ_EPCOS_DCS RX-50/150 ohm-SMD 5 pin
SFSY0038101	326-0000-00008	U105	Filter SAW_B39202-B9403-K610_1960 MHZ_EPCOS_PCS RX-50/150 ohm-SMD 5 pin
ENWY0005701	314-0000-00070	J102	CON. RF CONNECTOR WITH SWITCH_MM8430-2610RA1_3.000 mm_6 pin_MURATA_N/A
EXXY0025301	305-0000-00006	X201	Crystal Oscillator_7M26000314_26.0 MHZ_± 10.0 ppm_SMD-3.2*2.5mm-4Pin_TXC_N/A
EXSY0024401	305-0000-00083	X301	Crystal Oscillator_7M32000035_32.0 MHZ_±10.0ppm_SMD-3.2*2.5mm-4Pin_TXC_N/A
EXXY0024801	305-0000-00021	X401	Crystal Oscillator_Q-SPT7P0327620C5GL_32.768KHZ_±20ppm_SMD-7*1.5mm-4Pin_SII_CL=12.5pF
EFFD0002801	308-0000-00016	F1101,F1102	SMD THIN FILM FUSE_1.250 (1 ?) A / 32 V_CF06V3T1R25_0603_TA-I_N/A
SFEY0016101	308-0000-00139	U901-U906, U1001-U1004	EMI FILTER+ESD PROTECTION ARRAY_18V_AVRC18S05Q007100R_0508_AMOTECH_10 Pin 4unit,C=7pF
EUSY0387301	310-0000-00091	U602	N Channel-MOSFET-Dual_FDMA1028NZ_6pin_MicroFET_FAIRCHILD_N/A
EUSY0387401	310-0000-00082	U802	P Channel-MOSFET+Schottky_FDFMA2P857_6pin_MicroFET_FAIRCHILD_N/A
MCBA0049601	415-73210-0001	CASE	CASE_7321_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_Shielding case For BB_PLIGHT(JIANGSU)_Frame+Cover
MCBA0049701	415-73210-0002	CASE	CASE_7321_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_Shielding Case For RF_PLIGHT(JIANGSU)_Frame+Cover
MCBA0049901	415-73210-0005	CASE	CASE_7321_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_Shielding Case For RF2_PLIGHT(JIANGSU)_N/A
EUSY0362101	311-0000-00500	U202,U302	I.C LDO_TK63128BCBG_FC-4_4 Ball_NoMemory_TOKO_Vo=2.8V/200 mA
EUSY0381901	311-0000-00290	U701,U702	I.C AUDIO POWER AMPLIFIER_TPA2010D1YZFR_DSBGA_9BALL_NoMemory_TI_CLASS D
EUSY0387501	311-0000-00672	U1005	I.C LDO_S-1711A1828-I6T1G_SNT-6A_6 pin_NoMemory_SII_Vo=150mA,V1=1.8V,V2=2.8V, 1%
EUSY0387701	311-0000-00419	U1006	I.C LDO_S-1167B28-I6T2G_SNT-6A_6PINS_NoMemory_SII_Vo=150mA/2.8V
EUSY0387801	311-0000-00569	U1404	I.C DRIVER_TCA6507RUEP_QFN_12 PIN_NoMemory_TI_7 PCS LED DRIVER
SUMY0012501	312-0000-00038	MIC701	Omni-MIC._SPM0204LE5-QB_55 'dB_ - 38dB_± 3.0dB_4.72*3.76*1.25mm_NA_SMD Type_KNOWL ES_N/A
ESCY0007001	315-0000-00047	SW1401-SW1403	Switch Tact_LS12K2H-T_12V/20 mA_2 Pin_TACT_CITIZEN ELECTRONIC_Side tact

SFSY0037801	326-0000-00020	FL201	Filter SAW_B39901-B9431-M410_897.50 MHz_EPCOS_EGSM TX-50/50 Ohm-SMD 5 pin EPCOS
SEVY0010301	326-0000-00122	FL301	Filter Bandpass_LTB-1608-2G4H6-D1_2400~2500MHz_MAG.LAYERS_50/50 OHM. SMD 0603/4 pin
SFDY0002401	326-0000-00039	FL1101	Filter Dual Mode_EXC24CP121U_100MHz_PANASONIC_Noise,4pin-0504,120Ohm,I=500mA
MBFF0026301	415-73210-0003	CASE	CASE_7321_SILVER_STAINLESS STEEL_N/A_Shielding Case For LCM ASS'Y_PLIGHT(JIANGSU)_N/A
MBFZ0035201	415-73210-0006	HOLDER	HOLDER_7321_BLACK_PC+ABS_N/A_Support keyboard Plate Ass'y_A-TEK PRECISION (SUZHOU)_N/A
ENTB0004601	314-0000-00260	J101	CON. PIN STICK (POGO) CONTACT_N005M4-02A250MR_2.500 mm_2 pin_CCP_H=5.8mm
ENSY0023101	314-0000-00390	J602	CON. SIM CARD CONNECTOR_SIM-06JK3G_2.540 mm_6 pin_OCTEKCONN_H=1.8mm
ENSY0023201	314-0000-00371	J603	CON. PIN STICK (POGO) CONTACT_H316M0-03C250MR_2.500 mm_3 pin_CCP_H=7.0mm
ENZY0025201	314-0000-00373	J702	CON. WIRE TO BOARD CONNECTOR_BM04B-SURSHF-TF-LF-SN_0.800 mm_4 pin_JST_H=2.7mm
ENBY0050001	314-0000-00391	J801	CON. BATTERY CONNECTOR_BTP-03QF4G_3.000 mm_3 pin_OCTEKCONN_H=5.7mm
ENBY0050101	314-0000-00291	J901	CON. FPC CONNECTOR_04 6293 035 001 829+_0.300 mm_35 pin_KYOCERA ELCO_H=0.85mm
ENBY0047301	314-0000-00255	J1001	CON. PCB FEMALE CONNECTOR_AXK7L34227G_0.400 mm_34 pin_PANASONIC_H=0.9mm
ENRY0006401	314-0000-00254	J1101	CON. I/O FEMALE CONNECTOR_HSEJ-18S04-25R_0.400 mm_18 pin_HANSHIN_H=2.5mm
ENWY0006601	314-0000-00256	J1201	CON. MICRO SD CONNECTOR_502774-0891_1.100 mm_8 pin_MOLEX_H=1.8mm
ENBY0047201	314-0000-00066	J1401	CON. PCB FEMALE CONNECTOR_AXK720147G_0.400 mm_20 pin_MATSUSHITA_H=1.50mm
ENBY0050201	314-0000-00172	SW1404	CON. FPC CONNECTOR_04 6277 004 001 883+_0.500 mm_4 pin_KYOCERA ELCO_H=0.9mm
MCJK0105601	401-73210-0001	FRONT CABINET Sub-Ass'y	Front Cabinet_7321_BLACK_PC_Painting_Front Cabinet ASS'Y_A-TEK PRECISION(SUZHOU)_N/A
SURY0014501	313-0000-00065	RECEIVER	RECEIVER_2403-260-00017_10.0 * 4.8 mm_32 Ohm_85.0dB_PHILIPS_H=2mm,spring contact type
AWAB0035801	403-73210-0001	LENS	Lens_7321_BLACK_PPMMA_N/A_Main Lens_GREEN POINT(SUZHOU)_IMD
MPBG0093401	415-73210-0011	GASKET	GASKET_7321_BLACK_PORON_N/A_Sponge For LCM_SIAU CHON(KUNSHAN)_N/A
MKAG0014602	404-73210-0006	KEY	Key_7321_GOLD_PC+Rubber+TPU_Painting_RUSSIA_Keypad_SILITECH(Su Zhou)_Laser Etching
MCJN0101801	402-73210-0001	REAR CABINET Sub-Ass'y	Rear Cabinet_7321_RED_PC_Painting_Rear Cabinet Ass'y_A-TEK PRECISION(SUZHOU)_N/A
SJMY0009301	320-0000-00035	VIBRATOR	Vibrator Bar Type_Y0408A-400350303-0021a_R2.25+4.40*4.60*13.30mm_LNLON_Sponge 0.6mm , Spring contact
MPBJ0064901	415-73210-0031	GASKET	GASKET_7321_BLACK_PORON_N/A_Sponge For Flash LED LENS_SIAU CHON(KUNSHAN)_N/A
SNGF0047101	330-0000-00108	ANTENNA	ANTENNA EMBEDDED_7321_TRI BAND(GSM/DCS/PCS)_BLACK_NC019IA86_SHANGHAI UNIVERSE_PC Carrier + FPC
MCCH0143901	405-73210-0004	COVER	Cover_7321_GOLD_TPU_Painting_Screw CAP_ALL BLESSING_N/A
SADY0010301	8PCB-7321-0-02	FLASH BOARD	PCB_7321_NON-MB_FOR 7321 FLASH BOARD
MPBZ0230301	415-73210-0030	GASKET	GASKET_7321_BLACK_PORON_N/A_Sponge for Flash LED Board_SIAU CHON(KUNSHAN)_N/A
GMZZ0027701	409-00000-0079	SCREW	Machine Screw_Pan Head_Cross(JCIS)_1.6mm_4.5mm_BLACK_Steel_Plating Zinc_HNS_Brown Nylok
MCCF0048401	405-73210-0006	COVER	Cover_7321_BLACK_RUBBER、SILICON RUBBER_N/A_Antenna Cap_ALL BLESSING_N/A
SAFF0236901	P02 EC0011860	MAIN BOARD	Main Board Ass'y_7321_NATURAL_FOR 7321 MAIN BOARD.

SVLM0033701	327-0000-00067	LCD	LCD TFT_Transmissive_240x320 Pixels_2.00 inch_IM200DBNDA_LG INNOTEK_262K Color, FPC type
SACY0093701	321-M000-00061	MODULE	MODULE_7321_Pi-RoHS_12.15*12.0 mm_0.130 mm_2 Layer_Immersion Gold_AFC_7321FKB-004
SVCY0023001	335-0000-00060	CAMERA	CAMERA MODULE CMOS_C3AA-M246A_QXGA_LG INNOTEK_3 M Pixels, FPC + Connector
SUSY0028501	313-0000-00112	SPEAKER	SPEAKER MODULE_EME1813V_41.3 * 31.8 mm_8 Ohm_88.0dB_EM-TECH_±3dB,H=5.75 mm, Wire Type
SAEY0068001	8PCB-7321-0-01	KEY BOARD	PCB_7321_NON-MB_FOR 7321 KEY BOARD.
ENBY0047901	314-0000-00067	KJ101	CON. PCB MALE CONNECTOR_AXK820145WG_0.400 mm_20 pin_PANASONIC_H=1.5mm
GMZZ0028701	409-00000-0072	SCREW	Machine Screw_Flat_Cross(JCIS)_1.4mm_1.3mm_BLACK_Steel_Plating Nickel_HNS_Nylok
ADCA0098701	415-73210-0004	DOMES	DOMES_7321_SILVER_PLASTIC+METAL_N/A_Metal Dome_PRINTEC_N/A
SSAD0024902	331-0000-00090	TRAVEL CHARGER	Travel Charger_100~240V_5.10V_700mA_CE;UL_STA-P52RS_EN50075_WALTA_SALCOMP_MMI CONNECTOR
SGEY0003610	333-0000-00037	HEADSET	Headset Stereo Channel_Type_RMB-LGC870STKA_16 Ohm_Mic.S/N'58 'dB_- 38 'dB_PT. CRESYN_W/H Vol. Adj,18Pin+3.5 mm Plug
SGDY0015801	410-7338000001	DATA CABLE	Data Cable_7338_JESS-LINK_USB 4P to Mini Plug 18P/5P,1250 mm
SBPL0089901	306-0000-00067	BATTERY	Li-ion Battery Cell Packing_3.7V_900mAh_WHITE_LGE-U07-006-01_LG INNOTEK_N/A
MCJA0079701	405-73210-0001	COVER	Cover_7321_GOLD_PC_Painting_Battery Cover_A-TEK PRECISION(SUZHOU)_N/A

13.4 KM335 Replacement part list

LGE Part Number	Arima Part Number	location	Description
EUSY0361701	311-0000-00503	U301	I.C BLUETOOTH MODULE_MT6601T/BO-L_TFBGA_70BALLS_NoMemory_MTK_N/A
EUSY0361601	311-0000-00020	U401	I.C BASEBAND PROCESSOR_MT6229AT/AC-L_TFBGA_314 balls_NoMemory_MTK_N/A
EUSY0387101	311-0000-00502	U501	I.C STACKED MEMORY_HYC0UGE0MF1P-5SH0E_FBGA_149 BALL_256M+1.0G_HYNIX_SDRAM+ NAND FLASH
EUSY0361901	311-0000-00021	U601	I.C POWER MANAGEMENT UNIT(PMU)_MT6318A/DY-L_TFBGA_96 Balls_NoMemory_MT K_N/A
SURY0014601	311-0000-00396	U1302	I.C. AM/FM RADIO RECEIVER_Si4730-B20-GM_QFN_20PINS_NoMemory_SILICON LABS_N/A
SFSY0037901	326-0000-00004	U103	Filter SAW_B39941-B9401-K610_942.5 MHZ_EPCOS_GSM-RX -50/150 ohm-SMD 5 pin
SFSY0038001	326-0000-00006	U104	Filter SAW_B39182-B9402-K610_1842.5 MHZ_EPCOS_DCS RX-50/150 ohm-SMD 5 pin
SFSY0038101	326-0000-00008	U105	Filter SAW_B39202-B9403-K610_1960 MHZ_EPCOS_PCS RX-50/150 ohm-SMD 5 pin
SFAY0011201	311-0000-00051	U101	I.C POWER AMP MODULE(RF)_SKY77318-12_MCM_20 Pins_NoMemory_SKYWORKS_N/A
EUSY0362001	311-0000-00047	U102	I.C ANALOG SWITCH_ESHS-B085TB_LGA_12 Pins_NoMemory_HITACHI_Antenna switch f or triple band
EQBA0005401	311-0000-00049	U201	I.C TRANSCEIVER_MT6139BN/FR-L_QFN_40 Pins_NoMemory_MTK_N/A
ENWY0005701	314-0000-00070	J102	CON. RF CONNECTOR WITH SWITCH_MM8430-2610RA1_3.000 mm_6 pin_MURATA_N/A
ESCY0007001	315-0000-00047	SW1401-SW1403	Switch Tact_LS12K2H-T_12V/20 mA_2 Pin_TACT_CITIZEN ELECTRONIC_Side tact
EUSY0362101	311-0000-00500	U202,U302	I.C LDO_TK63128BCBG_FC-4_4 Ball_NoMemory_TOKO_Vo=2.8V/200 mA
EXXY0025301	305-0000-00006	X201	Crystal Oscillator_7M26000314_26.0 MHZ_± 10.0 ppm_SMD-3.2*2.5mm-4Pin_TXC_N/A
EFFD0002801	308-0000-00016	F1101,F1102	SMD THIN FILM FUSE_1.250 (1 ?) A / 32 V_CF06V3T1R25_0603_TA-I_N/A
EUSY0381901	308-0000-00139	U901-U906, U1001-U1004	EMI FILTER+ESD PROTECTION ARRAY_18V_AVRC18S05Q007100R_0508_AMOTECH_10 Pin 4unit,C=7pF
EUSY0387301	310-0000-00091	U602	N Channel-MOSFET-Dual_FDMA1028NZ_6pin_MicroFET_FAIRCHILD_N/A
EUSY0387401	310-0000-00082	U802	P Channel-MOSFET+Schottky_FDFMA2P857_6pin_MicroFET_FAIRCHILD_N/A
EUSY0387501	311-0000-00672	U1005	I.C LDO_S-1711A1828-I6T1G_SNT-6A_6 pin_NoMemory_SII_Vo=150mA,V1=1.8V,V2=2.8V, 1%
EUSY0381901	311-0000-00290	U701,U702	I.C AUDIO POWER AMPLIFIER_TPA2010D1YZFR_DSBGA_9BALL_NoMemory_TI_CLASS D
EUSY0387701	311-0000-00419	U1006	I.C LDO_S-1167B28-I6T2G_SNT-6A_6PINS_NoMemory_SII_Vo=150mA/2.8V
EUSY0387801	311-0000-00569	U1404	I.C DRIVER_TCA6507RUEQ_QFN_12 PIN_NoMemory_TI_7 PCS LED DRIVER
EXSY0024401	305-0000-00083	X301	Crystal Oscillator_7M32000035_32.0 MHZ_±10.0ppm_SMD-3.2*2.5mm-4Pin_TXC_N/A
EXXY0024801	305-0000-00021	X401	Crystal Oscillator_Q-SPT7P0327620C5GL_32.768KHZ_±20ppm_SMD-7*1.5mm-4Pin_SII_CL=12.5pF
MBFZ0035201	415-73210-0006	HOLDER	HOLDER_7321_BLACK_PC+ABS_N/A_Support keyboard Plate Ass'y_A-TEK PRECISION (SUZHOU)_N/A
MBFF0026301	415-73210-0003	CASE	CASE_7321_SILVER_STAINLESS STEEL_N/A_Shielding Case For LCM ASS'Y_PLIGHT (JIANGSU)_N/A
MCBA0049601	415-73210-0001	CASE	CASE_7321_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_Shielding case For BB_PLIGHT(JIANGSU)_Frame+Cover
MCBA0049701	415-73210-0005	CASE	CASE_7321_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_Shielding Case For RF2_PLIGHT(JIANGSU)_N/A
MCBA0049901	415-73210-0002	CASE	CASE_7321_SILVER_STAINLESS STEEL+COPPER-NICKEL-ZINC ALLOY_N/A_Shielding Case For RF_PLIGHT(JIANGSU)_Frame+Cover
SEVY0010301	326-0000-00122	FL301	Filter Bandpass_LTB-1608-2G4H6-D1_2400~2500MHz_MAG.LAYERS_50/50 OHM. SMD 0603/4 pin

SFDY0002401	326-0000-00039	FL1101	Filter Dual Mode_EXC24CP121U_100MHz_PANASONIC_Noise,4pin-0504,120Ohm, I=500mA
SFSY0037801	326-0000-00020	FL201	Filter SAW_B39901-B9431-M410_897.50 MHz_EPCOS_EGSM TX-50/50 Ohm-SMD 5 pin EPCOS
SUMY0012501	312-0000-00038	MIC701	Omni-MIC._SPM0204LE5-QB_55 'dB_ - 38dB_± 3.0dB_4.72*3.76*1.25mm_NA_ SMD Type_KNOWLES_N/A
ENTB0004601	314-0000-00260	J101	CON. PIN STICK (POGO) CONTACT_N005M4-02A250MR_2.500 mm_2 pin_CCP_ H=5.8mm
ENSY0023101	314-0000-00390	J602	CON. SIM CARD CONNECTOR_SIM-06JK3G_2.540 mm_6 pin_OCTEKCONN_H=1.8mm
ENSY0023201	314-0000-00371	J603	CON. PIN STICK (POGO) CONTACT_H316M0-03C250MR_2.500 mm_3 pin_CCP_ H=7.0mm
ENZY0025201	314-0000-00373	J702	CON. WIRE TO BOARD CONNECTOR_BM04B-SURSHF-TF-LF-SN_0.800 mm_4 pin_JST_ H=2.7mm
ENBY0050001	314-0000-00391	J801	CON. BATTERY CONNECTOR_BTP-03QF4G_3.000 mm_3 pin_OCTEKCONN_H=5.7mm
ENBY0050101	314-0000-00291	J901	CON. FPC CONNECTOR_04 6293 035 001 829+_0.300 mm_35 pin_KYOCERA ELCO_ H=0.85mm
ENBY0047301	314-0000-00255	J1001	CON. PCB FEMALE CONNECTOR_AXK7L34227G_0.400 mm_34 pin_PANASONIC_H=0.9 mm
ENRY0006401	314-0000-00254	J1101	CON. I/O FEMALE CONNECTOR_HSEJ-18S04-25R_0.400 mm_18 pin_HANSHIN_ H=2.5mm
ENWY006601	314-0000-00256	J1201	CON. MICRO SD CONNECTOR_502774-0891_1.100 mm_8 pin_MOLEX_H=1.8mm
ENBY0047201	314-0000-00066	J1401	CON. PCB FEMALE CONNECTOR_AXK720147G_0.400 mm_20 pin_MATSUSHITA_ H=1.50mm
ENBY0050201	314-0000-00172	SW1404	CON. FPC CONNECTOR_04 6277 004 001 883+_0.500 mm_4 pin_KYOCERA ELCO_ H=0.9mm
MCJK0105601	401-73210-0001	FRONT CABINET Sub-Ass'y	Front Cabinet_7321_BLACK_PC_Painting_Front Cabinet ASS'Y_A-TEK PRECISION (SUZHOU)_N/A
SURY0014501	313-0000-00065	RECEIVER	RECEIVER_2403-260-00017_10.0 * 4.8 mm_32 Ohm_85.0dB_PHILIPS_H=2mm,spring contact type
AWAB0035801	403-73210-0001	LENS	Lens_7321_BLACK_PMMA_N/A_Main Lens_GREEN POINT(SUZHOU)_IMD
MPBG0093401	415-73210-0011	GASKET	GASKET_7321_BLACK_PORON_N/A_Sponge For LCM_SIAU CHON(KUNSHAN)_N/A
MKAG0014603	404-73210-0005	KEY	Key_7321_GOLD_PC+Rubber+TPU_Painting_HINDI_Keypad_SILITECH(Su Zhou)_Laser Etching
MCJN0103401	402-73220-0001	REAR CABINET Sub-Ass'y	Rear Cabinet_7322_RED_PC_Painting_Rear Cabinet Ass'y_A-TEK PRECISION(SUZHOU)_ N/A
SNGF0047101	330-0000-00108	ANTENNA	ANTENNA EMBEDDED_7321_TRI BAND(GSM/DCS/PCS)_BLACK_NC019IA86_ SHANGHAI UNIVERSE_PC Carrier + FPC
GMZZ0027701	409-00000-0079	SCREW	Machine Screw_Pan Head_Cross(JCIS)_1.6mm_4.5mm_BLACK_Steel_Plating Zinc_HNS_ Brown Nylok
MDAK0019101	405-73210-0006	COVER	Cover_7321_BLACK_RUBBER · SILICON RUBBER_N/A_Antenna Cap_ALL BLESSING_N/A
SJMY0009301	320-0000-00035	VIBRATOR	Vibrator Bar Type_Y0408A-400350303-0021a_R2.25+4.40*4.60*13.30mm_LNLON_Sponge 0.6mm ,Spring contact
MCCH0150201	405-73210-0004	COVER	Cover_7321_GOLD_TPU_Painting_Screw CAP_ALL BLESSING_N/A
MGAD0189901	415-73220-0003	GASKET	GASKET_7322_BLACK_PORON_N/A_Sponge for Camera_SIAU CHON(KUNSHAN)_N/A
MPBJ0064901	415-73210-0031	GASKET	GASKET_7321_BLACK_PORON_N/A_Sponge For Flash LED LENS_SIAU CHON (KUNSHAN)_N/A
SADY0010301	8PCB-7321-0-02	FLASH BOARD	PCB_7321_NON-MB_FOR 7321 FLASH BOARD
MPBZ0230301	415-73210-0030	GASKET	GASKET_7321_BLACK_PORON_N/A_Sponge for Flash LED Board_SIAU CHON (KUNSHAN)_N/A
SAFF0240601	8PCB-7322-4-01	MAIN BOARD.	PCB_7322_QUAD-BAND_FOR 7322 MAIN BOARD.
SVCY0023001	335-0000-00060	CAMERA	CAMERA MODULE CMOS_C3AA-M246A_QXGA_LG INNOTEK_3 M Pixels, FPC + Connector
SVLM0033701	327-0000-00067	LCD	LCD TFT_Transmissive_240x320 Pixels_2.00 inch_IM200DBNDA_LG INNOTEK_262K Color ,FPC type

MGAD0190001	415-73220-0004	GASKET	GASKET_7322_BLACK_PORON_N/A_Sponge for Speaker Chamber_SIAU CHON(KUNSHA N)_N/A
SACY0093701	321-M000-00061	MODULE	MODULE_7321_Pi-RoHS_12.15*12.0 mm_0.130 mm_2 Layer_Immersion Gold_AFC_7321F KB-004
SUSY0028501	313-0000-00112	SPEAKER	SPEAKER MODULE_EME1813V_41.3 * 31.8 mm_8 Ohm_88.0dB_EM-TECH_±3dB, H=5.75 mm,Wire Type
SAEY0068001	8PCB-7321-0-01	KEY BOARD.	PCB_7321_NON-MB_FOR 7321 KEY BOARD.
GMZZ0028701	409-00000-0072	SCREW	Machine Screw_Flat_Cross(JCIS)_1.4mm_1.3mm_BLACK_Steel_Plating Nickel_HNS_Nylok
ENBY0047901	314-0000-00067	KJ101	CON. PCB MALE CONNECTOR_AXK820145WG_0.400 mm_20 pin_PANASONIC_H=1.5mm
ADCA0098701	415-73210-0004	DOME	DOME_7321_SILVER_PLASTIC+METAL_N/A_Metal Dome_PRINTEC_N/A
SSAD0024807	331-0000-00088	Travel Charger	Travel Charger_100~240V_5.10V_700mA_CE;UL_STA-P52IS_EN50075_WALTA_SALCOMP_MMI CONNECTOR
SGBS0004401	333-0000-00054	Headset	Headset Stereo Channel Type_OBO-EM-HG26D-05_N/A_Mic.S/N'50 'dB_- 40 'dB_OBO_18 pin conn.+3.5 mm plug+ AM Antenna
SGEY0008201	333-0000-00055	Headset	Headset Stereo Channel Type_EPB-LGS810STKS_16 Ohm_N/A_N/A_PT.CRESYN_Ear phone 3.5mm plug
SGDY0015801	410-7338000001	Data Cable	Data Cable_7338_JESS-LINK_USB 4P to Mini Plug 18P/5P,1250 mm
SBPL0099302	306-0000-00068	Battery	Li-ion Battery Cell Packing_3.7V_1100mAh_WHITE_LGE-U08-007-02_LG INNOTEK_LGIP-530A
MCJA0088001	405-73220-0001	Cover	Cover_7322_GOLD_PC_Painting_Battery Cover_A-TEK PRECISION(SUZHOU)_N/A